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PLEURO-PNEUMONIA ZYMOTICA: ITS CHARACTERISTICS AND PATHOLOGICAL ANATOMY.

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(*Continued from page* 170.)

IN order to facilitate the description of the physical *post-mortem* changes taking place in the parts which are involved in Zy. p. p., I shall arrange these structures in the following order: 1, Trachea; 2, Bronchia; 3, Connective Tissue (subdivided into *a*, *interlobular*, *b*, *lobular*, *c*, *sub-pleural*); 4, Parenchyma; 5, Blood-vessels; 6, Lymphatic glands and vessels; 7, Pleuræ. The subsequent changes including also 8, Epi- and Peri-cardium.

First stage.—The mucous membrane of the trachea and bronchia may show no signs of disease; or it may be of a yellowish-brown colour, be covered with an abnormal quantity of mucus, and present here and there small irregular hyperæmic patches: and in some instances petechiæ. Occasionally, also, in very acute cases, the bronchial tubes are more or less filled with serum or coagulated lymph, the latter being solid or largely infiltrated with air globules, and sometimes tinged with blood as the result of rupture of small capillary vessels from the violent

expiratory efforts of coughing. Sub-mucous effusion is seldom seen at this stage.

The connective tissue is surcharged with serum, constituting interlobular, lobular, and sub-pleural effusion, and giving rise (*a*) to the formation of bands of a white or pale straw colour, varying in thickness from $\frac{1}{16}$th to $\frac{1}{8}$th of an inch, between the lobules. The areolæ of the tissue are easily discernible; and if an incision is made through the parts, or pressure applied, the serum exudes and quickly coagulates into a thin jelly-like mass; sometimes, and especially if the animal is in good condition and has been dead sufficiently long to allow of the lungs becoming cold, the serum will be found coagulated in the meshes of the connective tissue. (*b*) To a glistening, somewhat solidified, and moist appearance of the parenchyma, with a slight increase in the depth of colour and in friability. (*c*) To elevation of the *pleura pulmonalis* in circumscribed or diffused patches; the membrane itself being of a white or a pale straw colour, according to the tint of the effused serum.

The parenchyma is always a little darker in colour, is of greater specific gravity, more friable, has a granular fracture, and very frequently its section reveals myriads of minute stellar-shaped vascular spots (due to hyperæmia of the capillary plexuses surrounding the air cells) with, occasionally, small circumscribed irregular patches of a brownish-red colour.

The blood-vessels are usually empty; the veins may contain coagula of blood or lymph, but there is no visible change in their coats—the *tunica intima* being of its natural colour, and glistening. As already pointed out, there may be capillary hyperæmia.

The lymphatic glands and vessels present no material change, the former may be swollen and slightly increased in vascularity; the latter distended with serum.

The *Pleura pulmonalis* may or may not be involved at this stage; if it is, there is simply the effusion of a limited quantity of colourless serum on its surface, and which may collect in the thorax; or there may be slight exudation of lymph, very friable, and but moderately adhesive in character.

The general characteristics of a Zy. p. p. lung in the first stage, are: increase in weight, bulk, and friability; diminution in resilient

power—and consequently increased resistance to inflation, and decrease in crepitation on pressure; with deepening of colour, and the presence, occasionally, of ecchymoses or hyperæmic patches in the bronchial mucous membrane, and vascular stellar spots in the parenchyma.

There is no absolute loss of textural integrity; and the general condition is simply one of *serous* and a moderate degree of *cellular* (*leucocytic*) *infiltration*, with the presence of a few coloured corpuscles.

The fluid contained in the lung-structure contiguous to the diseased portion, differs from that in the latter in being largely intermixed with air globules.

Second stage.—The Tracheal and Bronchial mucous membrane may be a little darker in colour. The petechiæ and hyperæmic patches have commenced to undergo degeneration; the portions of mucous membrane covering them may have given way, and allowed of the escape of the extravasated blood into the interior of the tubes, discolouring their contents.

The smaller bronchia are obliterated, either by the effusion of serum or exudations of lymph into their cavities; by the pressure produced on their exterior by surrounding connective tissue effusion and exudation; or by sub-mucous exudation. In those tubes into which there is effusion alone, the serum becomes converted into foam by the passage to and fro of the inspired and expired air.

The serum, which was thrown into the connective tissue in the first stage, has now to a great extent become absorbed; and more particularly is this the case on the approach of the third stage: the interlobular tissue becomes contracted, and, as a consequence, the lines formed by it are (in most instances) narrower. In some cases, however, exudation of lymph into the connective tissue takes place at this stage, and the bands become thicker and more solid than in the first stage.

The parenchyma undergoes a material change. It is more solid, more friable, and the granular character of the fracture is more determined; its colour is either red or black, depending entirely upon the amount of bronchial obliteration and capillary destruction. If the black portions are exposed to the atmosphere,

they rapidly become of a bright red or magenta hue; the two conditions (though differing widely from true consolidation) are known, respectively, as *red and black hepatization.*

The destruction of the parenchyma at this stage has been attributed to pressure exerted by the effused serum in the interlobular connective tissue. Such is not the case, however; it is due to *parenchymal effusion* and *actual rupture of the capillaries,* and differs in no respect from the state of the lung-structure in P. h. Others, again, have asserted that the dark colour of the parenchyma is due to crowding together of the red cells in the capillaries, as a consequence of deprivation of serum.* The effused serum of the part, if microscopically examined, will be found to be largely surcharged with coloured corpuscles.

The parenchyma is easily detached from the interlobular tissue, leaving the latter intact, and causing it to present a honeycombed appearance.

The larger blood-vessels are more or less obliterated, either by coagula of lymph or blood. If they are not obliterated, the greater will be the probability of the subsequent changes in the lung-structure assuming an organative character. The capillaries are absolutely broken up.

The increase in the size of the lymphatic glands is very marked at this stage. In addition, they become softened, and as the result of acute granular and fatty degeneration, their glandular characteristics are entirely lost; and they have much the appearance and consistence of Devonshire cream. The vessels are enormously distended with yellow lymph, and can be readily traced (often the size of a quill) from one group of thoracic glands to another, and even to the hepatic ganglia in some cases.

The pleural effusion and exudation are considerably increased. The effusion will vary in quantity in every individual case; there may be only a pint of serum in the chest, or there may be several gallons.

* This is not so: the colour is due to the arrestation of the coloured blood corpuscles (which have escaped from the capillaries), in the meshes of the living structure; the black hepatization is due to blocking up of the bronchial tubes, and if a section is exposed to the atmosphere it quickly becomes red.

The exuded lymph is more cohesive, coagulates firmly, and produces adhesion of the pleuræ; the flakes are, as a rule, of a yellow colour, easily broken down, and when stripped from the pleura, leave its surface glistening and smooth.

The general characteristics of the second stage are—A mottled appearance on section, increase on bulk, density, specific gravity, and friability; absolute loss of textural integrity, breaking up of the capillary vessels, and, as a consequence, parenchymal extravasation: obliteration of large vessels and small bronchia, with destruction of the thoracic lymphatic glands.

If compressed, the lung exudes a large quantity of serum (often bloody); if thrown into water, it rapidly sinks; if boiled, it presents the appearance of boiled liver—the interlobular spaces, however, being still very distinct; if macerated in alcohol, it has also the characteristics of liver, with diminution of the interlobular spaces—the latter being due to the great attraction for water exerted by the alcohol.

If the destructive process is so great as to tend towards the production of mortification, a segregating lymph-band is, even now, formed, the centre of which will reveal, on section, a distinct vascular line, and the serum contained in its meshes will be charged with leucocytes. In some cases the lymph-band becomes the means, not only of preserving the contiguous lung-structure from further injury, but also of arresting the destructive process in the diseased portions.

Third stage.—The smaller bronchia are entirely obliterated, either from external pressure; or from submucous or intratubular exudation and organization of the exudate. The mucous membrane in the ecchymosed patches is distinctly ulcerated; the surfaces of the ulcerations being of a light-yellow colour, from collections of degenerated epithelium and lymph, on removal of which the bright-red, hyperæmic, submucous tissue is revealed.

The tracheal exudation is increased, and shows a tendency to become organized. Occasionally, however, it is mottled from extravasation, as the result of rupture of small capillaries. The calibre of the trachea and of the involved bronchia is materially diminished, from the pressure of the exudate upon the mucous membrane, and thus the difficulty in respiration is increased in

this stage. A transverse section shows, 1st, mucous membrane; 2nd, submucous exudate; 3rd, tracheal or bronchial ring; 4th, extratracheal exudate.

The connective tissue and parenchymal alterations in this stage will depend upon the amount of injury sustained by the parts; and the condition of the parenchyma will materially influence the condition of the connective tissue.

If the injury has been severe, and the arteries of supply obliterated, with destruction of the arterioles and capillaries, all semblance of lung-structure is lost; the part, to the naked eye, has a homogeneous appearance, is of a *brick-red* colour, possesses a peculiar acetous odour, which after a time changes to one of a valerianic character; it is extremely friable; and, on section, the only trace of organization perceptible is in the bronchial tubes and large blood-vessels, which resist the destructive process for a considerably longer period than the other portions of the lung-structure. The tubes are filled with exudate, and the vessels with coagula of blood or partially organized lymph.

The mortified portion is now distinctly isolated from the surrounding structures by a segregating lymph-band, hyperplasy of the adjacent interlobular tissue is marked, and there is increased density of the parenchyma.

If the injury has not been sufficient to produce absolute destruction of the parenchyma and obliteration of the vessels of supply, true inflammatory processes commence. The red cells become liquefied or disintegrated, and absorbed; coagulable lymph is thrown out, and becomes organized very rapidly; the connective tissue becomes denser and firmer, and the interlobular portions thicker—small blood-vessels being easily traced in it by the naked eye, and fibrillization by the aid of the microscope. The amount of serum is diminished, both in the connective tissue and the parenchyma; consequently, a section is less granular in appearance, and does not exude serum to the same extent as in the second stage. The involved lung is tougher, and of a paler colour: sometimes grey, sometimes yellow—constituting, respectively, *grey* and *yellow hepatization.*

The arteries and veins, as already indicated, become obliterated, either as the result of external pressure, coagulation of blood,

and organization of the coagulum in their interior, or thickening of their coats by initial inflammatory processes.

The lymphatic glands, if mortification of the lung has taken place, will be found utterly destroyed; sometimes of a creamy colour and consistency; at others resembling an olive-green pulp. If, however, the destructive process has been arrested at the termination of the third stage, the gland may show a tendency to re-organization, and become firmer, denser, and more vascular. The vessels are still distended with lymph—the distension being greatest if there is extensive venous obstruction. The coats of the lymphatics will also give evidence of commencing inflammatory changes, by becoming opaque and thickened.

The pleural exudations are considerably altered; the serum having become absorbed, the albumen and fibrine alone remain. They present a more consolidated appearance, and are more contracted; frequently being reticulated in structure, from the formation of numerous small bands. Organization commences in those layers which lie in apposition to the pleuræ; and on stripping off the superjacent layers, a large vascular granulating surface is exposed. The granulations projecting into the layers of lymph, leave, on detachment, numerous alveoli on the under surface of the latter. Coincidently with the development of the granulations, tough fibres are formed, which hang, when the layers of lymph are removed, like small threads between the granular bodies.

The characteristics of the third stage are: absolute loss of integrity (death), with segregation of the injured lung; hyperplasy of contiguous interlobular tissue; and increased density of the surrounding parenchyma. If the destructive process is arrested, the conditions are: absorption of the red cells; consolidation of the parenchyma; hyperplasy of the interlobular connective tissue; restoration of circulation; *grey or yellow hepatization.* In either case, the changes in the bronchia and trachea are: ulceration of the mucous membrane, and consolidation of the submucous and extratubular exudate.

Accessory Post-mortem Lesions of Zy. p. p.

These are seen: 1st, in the unaffected lung-structure; 2nd,

in the stomachs; 3rd, in the intestines; 4th, in the cardiac pleura.

1st. The healthy portions of lung are sometimes a little more solid than natural; ecchymoses may exist in the parenchyma, and effusion or exudation in the bronchial tubes—in which, also, in some instances, a marked increase in the quantity of mucus is observable. The bronchial mucous membrane may or may not be altered in colour; if it is, it will be of a coppery hue; and occasionally ecchymoses may exist.

Emphysema may be a concomitant; usually, however, it is a subsequent lesion.

The serum which is found in the bronchial tubes is sometimes simply the result of overflow from the tubes of the affected parts.

2nd. The stomachs. As a rule, the first, second, and third divisions are healthy. As in all chronic or prolonged diseases, the contents of the second are comparatively dry, and frequently rolled up into large masses; while the material in the third is dry and hard, the epithelium readily peeling off with the cakes of ingesta, and the latter showing the impress of the papillæ on their surfaces.

Occasionally large irregular ulcers of the mucous coat are found in the second, third, and fourth compartments: these are always preceded by circumscribed hyperæmic circles or extravasations; they are not peculiar to Zy. p. p., but simply concomitants of it, and of many other diseases in which an altered condition of the blood is a prominent characteristic. Moreover, similar conditions are observable whenever prolonged contact of vegetable matter (containing, in all probability, acrid herbs) with the coats of the stomach, from arrestation of their functions, takes place.

Zy. p. p., too, may be accompanied, or preceded, by epizoötic Eczema; in which disease gastric and intestinal lesions are frequent.

3rd. In the intestines hyperæmic patches (especially in the glands when they have taken on vicarious action) and extravasations, followed by ulcerations, are by no means uncommon.

4th. Cardiac Pleuritis is a concomitant of the disease; though,

like Emphysema and Pericarditis, it is more frequently a subsequent lesion.

Specificity of Zy. p. p.

From a consideration of the course and history of the disease, and of its morphological characteristics alone, we are justified in concluding that Zy. p. p. is a distinct and specific affection, and that, although the structures which have been injured by the localization of its lesions, secondarily (unless dead) undergo inflammatory changes; primarily, the disease is a purely effusive one—*i.e.*, in the initial stage, effusion—simply and purely—is the characteristic lesion; in the second and third stage, passive are accompanied, and finally succeeded, by active processes; and in the subsequent changes (which I shall consider hereafter) inflammatory processes alone go on.

In order to demonstrate the specific nature of Zy. p. p., we have other evidence than that above alluded to—viz., the presence, in the effused serum of the first and second stage, of an immense number of highly refractive and actively oscillating, though minute, micrococci,* which lose their activity and disappear on the advent of sphacelus; being, in fact, in some instances, replaced by staff bacteria.

Of the acrid character of the effused serum, we have ample proof in its effects upon the thoracic lymphatic glands.

In no ordinary effusive disease—as, for instance, acute Œdema of the limbs in horses—do we see such actively degenerative processes go on in the lymphatic glands as is seen in Zy. p. p., though the amount of work done is in each case equal. Again, if the effused serum is injected into the subcutaneous cellular tissue of *an* animal, inflammation, more or less active, is immediately induced; the results of which may be exudation and organization of the exudate; suppuration, or sphacelus—the result depending upon the intensity of the inflammatory processes and the acridity of the injected serum.

* This fact I have indubitably demonstrated, microscopically, since writing the first part of this paper.

SHEEP DISEASE IN OREGON, UNITED STATES OF AMERICA.

COMMUNICATED BY W. ROBERTSON, M.R.C.V.S., KELSO.

BELIEVING the following communication likely to instruct or interest some of the readers of the *Veterinary Journal*, I offer no apology for bringing it under notice. It may however be mentioned, by way of explanation, that this copy of a letter from an active and intelligent Scottish agriculturist, at present engaged in stock management in Oregon, United States, was received by me lately, in reply to one containing advice sent to Oregon twelve months ago. It would appear that over large tracts of territory in the Western States of America, and in those bordering on the Pacific Ocean, a heavy loss is sustained by stock owners, year by year, amongst both cattle and sheep—particularly the latter—from a disease which, judging from descriptions received, is evidently *Anæmia*. One of the chief causes of this condition seems to be the enforced confinement of animals, for too lengthened periods, to a diet of perfect sameness and of moderate nutritious value.

The suggestions offered as preventive measures for this *anæmic* condition, were mainly directed to the securing of a food supply more liberal and more varied in character than that hitherto relied upon: it being pointed out at the same time that this might be obtained by a mixture of grasses in both the summer pastures, and in those cut for winter forage, as also by the addition of some artificial food at all seasons of the year.

Mention is likewise made by our correspondent of two parasitical diseases of the air-passages in sheep,—one of which at least is common enough with us, the other less so. The entire letter is interesting, in so far as it discloses conditions and operations of agencies very similar to those encountered among the flocks of our own country.

"Let me first speak to you of some experiments with animals suffering from *Anæmia*, or bloodlessness, and of the rapid and satisfactory improvement in both cattle and sheep following a change from timothy grass to a variety of food. My

first experiment with sheep was on ten eighteen-months'-old long-woolled wethers, selected from a neighbouring flock of two hundred, all suffering from Anæmia. The ten for experiment I drove in a low-sided waggon a distance of five miles, to where I resided; their feet were then untied, but so weak were they that they were unable to jump out. On arrival at their destination, I weighed them; the average live weight of the ten, including nearly seven months' growth of wool, was fifty pounds. This was on the 1st November, 1874. I put them into a large pasture full of indigenous plants and grasses, where no sheep had been for two years; they were not there two weeks before I observed them much livelier. As the flock I had taken them from was receiving timothy grass only, I determined to give the ten, for experiment, grass alone to begin with; so that the test might be the more reliable, and prove whether or not it was want of variety in the food that caused the sickness. As the winter was unusually severe, the remainder of the affected flock were amply supplied with hay, and had sufficient shelter provided; the ten invalids received neither hay nor shelter. With a *variety* of grasses in the depth of a severe winter, the ten improved rapidly; while the flock from which they were taken were dying fast under care and comfort. On the 1st of February, I began to give the ten a few oats and bran; naturally, they improved fast on this. On the 1st of March, I observed that one of them improved slowly as compared with the others; he discharged much at the nose, as they all did more or less. Having killed him, and carefully examined his bronchial tubes and lungs, I found a great deal of frothy mucus in the parts, and followed the same to the nose, until its discharge. Although no live insects were found, yet the lungs so much resembled, in general appearance, those of calves labouring under '*hoose*,' that I dreaded its presence; it was passed over, however, for the time being, as mere catarrh. This I will refer to again. On the 1st of April I took the artificial feed off the remaining nine, the spring grass being now good and plentiful; and in addition to a liberal allowance of salt they had been receiving, there was mixed with it tar and sulphur; this I did with a view of combating the supposed catarrh. Under this change the nine im-

proved faster than ever. In June and July these nine sheep were slaughtered for home use; their average weight, *dressed*, was eighty pounds; their average live weight, with seven months' wool, only eight months previously, was fifty pounds. Such was the result of a few months' variety of treatment, such as described. Following this I discovered Anæmia in another form among my breeding ewes. Through the *North British Agriculturist*, and from the perusal there of some remarks of yours upon Anæmia at a meeting of the Scottish Metropolitan Veterinary Medical Society, I first apprehended this form. The disease appeared in a flock of fifty very fine long-woolled ewes, part Leicesters, and the greater part Cotswolds. During the winter of 1874, and until March, 1875, I kept these ewes all right on a six-acre paddock close to my house, and allowed them artificial food and night shelter. About nine o'clock every morning I turned the whole flock into an adjoining patch of turnips, and allowed them to remain until four o'clock in the afternoon, when they were called to the pasture to receive their regular supply of oats and bran. The Leicesters being more active than the others, came quickly to call; the heaviest of the Cotswolds lagged behind, and they often required to be driven from the turnips; these Cotswolds, as a rule, seemed to have eaten excessively, and were careless about their oats and bran, even when driven up to the troughs in time. All were in fine condition; but in spite of this, those that ate sparingly of the oats became dull and listless, and as the season wore on some of them began to show œdematous swellings under the jaws. Those which came to the troughs regularly looked well and healthy.

"When lambing time arrived, parturition went hard with some of them. I lost seven of thirty-two Cotswolds, in addition to their lambs—which, I may mention, were very large, but instead of being covered with that peculiar yellow mucus which is so marked in health, making birth comparatively easy, the lambs from the ewes that died were white and dry. As the ewes died, I observed that they were the sluggish ones that seldom came up to take the artificial feed. Among the Leicesters, and other Cotswolds that did come regularly, there was neither loss of ewe nor lamb.

"*Hoose, Worm, or Strongylus bronchialis* (*filaria*).—I have already referred to the ten experimental sheep as discharging large quantities of mucus from the nostrils; from which I suspected *hoose*, the same as in calves. I had seen sheep largely affected in this manner in New Zealand, causing great mortality, as also along the Pacific coast; so it was no novelty to me. As deaths occurred in what remained of the two hundred from which the ten already spoken of had been taken, *post-mortem* examinations were made, noting dates, symptoms of disease, etc. In addition to the anæmic condition, in March nearly all showed excessive discharge at the nose: the weather at this time was very cold and wet. On opening the bronchial tubes, some were found filled with mucus, others with mucous froth and the 'hoose-worm,' or *Strongylus bronchialis* (*filaria*). There was also found in the head the grub of the *Œstrus ovis*, which I shall notice by-and by. The sheep affected with 'hoose' discharged much at the nose; in other ways they resembled those suffering from Anæmia. They had a frail, miserable appearance, tottering and stumbling when quickly roused; were languid in their eyes and thriftless in their wool, and bloodless-looking. Those, again, that were slightly affected, and were receiving artificial food to counteract the ravages of the parasite, still had an unmistakeable nasal discharge, together with an equally unmistakeable cough; the young ones never gamboled, and invariably carried the old wool on their faces long after the regular shedding season.

"I will give you the result of the first *post-mortem* examination. After carefully bleeding the sheep, and collecting the blood, the weight of this fluid was forty-eight ounces. Coagulation was rapid, and after standing ten hours, the serum was found equal in quantity to the clot. Having removed the viscera, the liver was first examined; it presented a pale and soft or fatty appearance; the portal and hepatic vessels were healthy, the gall-bladder was very large, double the natural size, and distended with a pale watery fluid.

"The intestines looked normal; the kidneys appeared to be much altered, being softer in texture, with the capsule easy of separation from the underlying structures. The heart was pale and flabby.

"The lungs did not exhibit any very marked structural alteration; the lower lobes, on pressure between the fingers, imparted a sensation similar to what is felt in handling the same structure in the first stages of Pneumonia. On opening the air-tube from the larynx to its smaller divisions, the lining membrane was observed to be of a pale colour, and coated with frothy mucus; in the smaller branches there was found a large collection of thread-like worms, alive, and rolled up together in bundles; the minute ramifications were filled with frothy mucus.

"On opening the head to examine the brain, the grub of the *Œstrus ovis* was met with in the frontal and nasal cavities. The brain itself was pale in colour, and much softened, the anterior portions of both hemispheres of a soft cheesy consistency, and the olfactory bulbs were almost destroyed. The mucous membrane lining the nostrils was highly congested, and covered with a tenacious mucus; the same condition being continued into the fauces. Other sheep were examined, with the same results; although in some cases the 'hoose-worm' was invisible to the naked eye, but visible in large numbers by aid of a magnifying glass.

"Here is the result of another *post-mortem* search in the same flock of sheep, made by two eminent physicians in Portland, Oregon. It is given as follows:—

"'I herewith submit a report of the *post-mortem* examinations which we have made of a few specimens of your sheep. The animals were emaciated, the skin easily torn, the flesh and tissues of the brain, liver, and kidneys were pale, infiltrated, soft, and friable; but no structural changes were observable under the microscope. The mucous membrane of the nasal passages and bronchial tubes was filled with worms (*Strongylus bronchialis*), and around them the lung-tissue was consolidated by a fibrinous exudation into the air cells, as in Pneumonia. The specific gravity of the blood was 1050; of the serum after separation of the clot, 1028; coagulation rapid. The larvæ of the gad-fly (*Œstrus ovis*) were found in the nasal passages of the sheep.'

"*Grub in the head of sheep* (*Œstrus ovis*).—On examining the sheep affected with 'hoose,' I found in some, in the frontal sinuses of the head, the grubs or larvæ of the *Œstrus ovis;* they

were present in nearly all the heads of those I examined: in some only one grub, in others as many as four; the latter was the greatest number found. The larvæ were in full vigour. In the cavities there was a clear slimy matter—produced, I suppose, by the presence and irritation of the grub; this was not excessive in amount, and the discharge never reached the quantity met with as the result of the presence of Strongyli in the bronchial tubes; the matter discharged was also clearer in colour. After a few examinations, before and after death, the difference in the character of the mucus discharged in these two affections is readily enough discernible.

"From what I have seen and experienced, I am satisfied that Anæmia, or a condition of bloodlessness in sheep, is met with both as a sequel of 'hoose,' and as the result of confinement for a lengthened period to sameness of food. The latter can be easily remedied by tonics and variety of diet. When resulting from the presence of Strongyli in the minute air-tubes, it is more difficult to combat; but the desirable alteration can be brought about by a change of pasturage and judicious treatment; the two must go together, otherwise labour will be in vain.

"Observe the wonderful effect these had on the ten sheep I experimented on. The flock they were selected from became greatly emaciated, and numbers died; the lambs from these, in April, 1875, fell early victims to the disease. The successful result of the experiment with the ten suggested the mode of action which was adopted with the remainder of the flock—viz., complete change of pasture by removal to grazing where no sheep had been for two years, and the exhibition of tar, sulphur, and salt, *ad libitum*, in troughs; this mixture the sheep soon learned to relish, and continued to lick freely. In a few weeks deaths ceased, and a marked change for the better took place in the survivors. They were shorn on the 1st of June—a miserable clip; still the sheep were improving, and their new wool looking healthy; in August they were disposed of, looking blooming and fat.

"As another instance of the beneficial results of the course of treatment indicated, I may instance that of a neighbour who

owned a small but select flock of Merinos. This gentleman informed me that he had lost eleven sheep in a few days, and that he was wholly unable to account for this mortality. He was of opinion, however, from what he had seen, that it resembled a disease of the lungs described in the *Albany County Gentleman*, for which the writer recommended turpentine.

"We had immediate recourse to dissection of the deceased, and readily found *Strongyli* in the minute ramifications of the air-tubes. I asked him if he could account for this condition, but he seemed unable to do so, and replied that he could account for the *Snots:* not knowing, apparently, that the nasal discharge which receives this name is merely the result of the presence of these parasites in the air-tubes. He stated that the ram which he purchased last fall, and used with the ewes, died of *Snots;* and that, as they all fed from the same troughs during the winter, he might have infected the rest of the flock. This propagation of the disease by means of contaminated troughs seemed to me extremely probable. I advised him at once to change the pasture, and give the sheep turpentine, with salt, from clean troughs. This treatment was begun by allowing each sheep a teaspoonful of turpentine, along with a little salt—taking care not to surfeit them at first; this was continued for some time; deaths ceased, and in three months the sheep looked as well as ever. There were no *Œstri ovis* to be found in the heads of those which died; indeed, it is seldom that these are found in Merinos—owing, I suspect, to the small nostrils of these animals not admitting the gad-fly.

"I could mention many more instances where this same disease has been propagated to all appearance by contagion.

"Some sheep-men, either from ignorance or carelessness, pay little heed to cleanliness, even although aware of the presence of disease—shutting in the same shed the healthy with the diseased, and feeding all from the same troughs. The walls of the sheds, as high as the sheep can reach with their noses, should be washed, weekly at least, with chloride of lime solution, or some other disinfectant; the troughs, when in use, should be washed and made scrupulously clean always after feeding from them, and once a week well soaked in the inside with boiling

tar. I have not yet tried the inhalation of sulphurous acid produced by burning sulphur, but intend to do so; as I am satisfied it will prove very destructive both to *Strongyli* in the air-tubes, and *Œstri ovis* in the cavities of the head.

"Although, as I have stated, it would appear that this 'hoose' in sheep is with us propagated by contact with already diseased and suffering animals, I am nevertheless satisfied that the larvæ or eggs of these thread-worms are extensively found on our old grasses, particularly on such as are grown on lands which have been flooded.

"Agriculture in Oregon not being far enough advanced to aim at under-drainage, the general practice is to crop the dry land only, and add timothy grass to the indigenous pastures on the swails or swamps which are cut for hay.

"Another point deserving of notice is the nature of our fences; they are known as *zig-zag* or *worm* rail fences, and encircle almost every field in the country. The intervening spaces between the rails are sown with timothy grass, along with which is to be found a deal of decayed fern and other grasses—affording, as I imagine, a splendid *habitat* and breeding-ground for every variety of parasite. There seems little chance of stock being freed from the ravages of these, until these swails are drained and cultivated, and the mass of decaying matter removed from the fences. As so much additional proof in the direction of establishing the assertion that 'hoose' may be induced from feeding from hay grown on these swamps, I may mention a case which occurred last spring. At that time, six highly-bred short-horned calves were suddenly seized with 'hoose'; and at first I was extremely puzzled to know where or how they had been affected. They had been kept as clean as rich men's children, and their troughs as sweet as household plates. They were fed at three weeks old with a little chopped hay, and on the fourth week all were affected with 'hoose.' The hay they were eating was grown on these swails; and from this I feel satisfied they were infected. I gave them daily a mixture of camphor, turpentine, and linseed oil; five recovered, and the sixth, after a relapse, died from Pneumonia.

"Before closing, allow me to narrate the result of an experiment

in treating an animal suffering from *Œstri ovis.* The patient was a Leicester ram, which I believed to be suffering from both 'hoose' and grub in the head; he was in fine condition, having been highly fed, that he might the better withstand the attack of the *Strongyli.* One day in April, 1875, his face was noticed to be much swollen, and this was at once attributed to the presence of *Œstri ovis;* so it was determined to try the effect of injecting turpentine into the nasal cavity.

"The animal was driven into a small loose box with a clean-swept wooden floor, caught, his head held back, and a pretty strong solution of spirits of turpentine injected up his nostrils—the head being held back for a short time after the introduction of the liquid. This treatment nearly killed him; however, in about five minutes he stood up, sneezed violently, and, to my delight, discharged from his nostrils three large grubs, almost as large as the warbles found on the cattle's back. Two of these grubs died immediately; the third soon afterwards. So much for parasitism amongst our stock in Oregon."

NOTE ON A CASE OF RECOVERY FROM RINDERPEST.

BY J. H. BLAIR, ESQ., SHANGHAI, CHINA.

THE cow which is the subject of the following note, was in the country when the first symptoms of the disease declared themselves. I had her immediately brought in, and placed in the same stable with two other animals, both of which were in a very advanced stage—so advanced, in fact, that they died next day.

My object in removing her was to avoid infecting another stable; and I considered it immaterial as regarded herself where she was kept, as I had no hope of saving her. As soon as she was in her new quarters, I administered an enema of soap and warm water to remove accumulations in the lower bowel, which I had observed in previous cases had always preceded the onset of violent purging. Her eyes were severely inflamed, thick mucus

was pouring from the nose, and the vagina was likewise in a state of inflammation.

In the afternoon of the same day, having meanwhile come across a recommendation to try quinine, I gave her one drachm of sulphate of quinine suspended in hot water, and repeated the dose after an hour. The medicine was merely poured down her throat. Next morning, twenty hours after the first dose, she was decidedly better, much less stupid and listless, and began to eat. Dr. Henderson, who has had such large experience in these cases in this place, saw her now, and considered her cured. On this day, violent purging of most offensive stuff set in, but did not appear to weaken her. The fæces gradually changed in character, and by the fifth day were healthy. I continued the treatment for three days, giving the quinine in gradually decreasing doses until I found her ruminating. On the fifth day, her appetite was completely re-established, so that her craving for food could hardly be satisfied. She was several months in calf when she was seized, and ten days after her health was restored she aborted. The calf was dead, but she is now in full milk.

Although this is for the present only a solitary case, the rapidity of improvement after the administration of quinine, joined with the inevitable fatality of the disease when left to itself, convinces me that to the quinine alone was her recovery due. I only regret I did not get the hint sooner, for the sake of the rest of the herd.

GLANDERS AND FARCY.

BY R. F. DYER, M.R.C.V.S., LIMERICK.

HAVING read the editorial remarks on Glanders in the March number of the *Veterinary Journal* with much pleasure, I am induced to publish a few of my own, believing that they may prove not a little interesting to some of the readers of this journal. Fortune has rather favoured me in cases of Glanders—a disease the diagnosis of which is of considerable moment in veterinary practice, so far as the horse is concerned.

XUM

Being consulted a few years ago in reference to a young horse supposed to be suffering from a severe cold, I was of opinion that the animal was affected with Glanders; and in order to ascertain, if possible, the cause of the attack, my attention was directed to a pony belonging to the same owner. I could detect nothing, save and except a bluish tint of the membrane of the nose, as well as an indurated submaxillary gland, no larger than a *small pea*—which, however, adhered to the maxillary bone. I determined upon inoculating an ass, to test the state of health of the pony; this was done by merely scratching the ears and nostrils of the ass, and rubbing a small portion of mucus from the nostril of the pony upon the abraded parts.

At the end of seven days I went to examine the ass, and found it suffering from an attack of both Glanders and Farcy. The owner expressed himself satisfied, and suggested that the animal should be slaughtered. This I objected to; urging as a reason that his friends would, in all probability (if the ass was killed), declare that another mistake had been made, that he might have recovered, and so forth. My advice was to leave the ass to nature. He died on the thirteenth day, and exhibited the same pathological lesions after death as did the horse.

The pony, instead of being condemned to death, was presented to a country friend who had no belief in the animal being affected with Glanders; this country friend met me a short time afterwards, and said, "I have cured the pony." I was anxious to know what he meant; when he said he blew some stuff into his nose, and dried up everything. He was cautioned not to allow the pony near any of his horses, or he might regret it. He thought there was no danger. A little while after he met me again, and said he had lost a mare from a *bad cold;* that a "blackguard man" (his own words) had allowed the mare to be out in the rain at the time she had the cold—which caused her death. I again cautioned him, remarking that his was "no one" case of death. He parted with the pony to a person who resided in the town, and who was a client of mine. One day the groom of the original proprietor of the pony came into my office, and said the pony was in the forge. I requested the man in charge of him to take him back to his master, with my compliments, and that I

could not allow the animal to come to the forge. This irritated him, and he left the place.

Subsequently to this date, a nobleman tells me he has purchased the pony, which I exclaimed against, mentioning briefly what had happened. The present owner, being incensed at my interference, had the pony examined by a Veterinary Surgeon, *who pronounced him perfectly sound.* Shortly after this I heard that two horses had died in the stables where the pony was located. I went to the owner to make inquiries, and he said he had lost two horses, but they both died of "colds." He acknowledged that the pony was in the stable with them. To my further inquiries he answered to the effect that the pony had been given away to a poor man who works on the road. I lost sight of the animal at this time.

From this statement it will be gleaned that an animal to all appearance in perfect health has the power of infecting others, or of propagating the most contagious disease with which we are acquainted; and it behoves all horse-keepers and proprietors of horses to take especial care of animals which at any time have suffered from "colds."

As I said before, there is not so much danger with animals suffering from colds when the discharge from the nose is profuse, because every one is alarmed at the sight of such a condition. It is when animals are supposed to have recovered, and when all suspicion is allayed, that the danger arises. It must be remembered—and it cannot be too strongly impressed upon the minds of owners of horses—that when such an experiment as was made by me upon the ass produced such a result, it ought to satisfy the most sceptical that they are not always safe, after having had distempered horses In their stables.

It is at all times admitted that a full and accurate statement of cases which have occurred in one's practice, is preferable to opinions advanced by persons who may or may not have had experience of the disease under consideration. Permit me to relate another instance which caused a good deal of discussion in veterinary circles, as to the state of a mare which had been purchased in England—imported thence from Ireland,—and which animal was examined by a very experienced veterinary

surgeon previous to purchase. The veterinary surgeon called in the month of February, 1867, when I had charge of a breeding establishment, to consult me as to a case which gave him much annoyance. His words were—"I want you to get me out of trouble." I assured him I would give him my assistance. The case was this:—A medical man, residing in Somersetshire, purchased an Irish mare, just imported, for the sum of twenty-five pounds, subject to the opinion of this veterinary surgeon. He examined the animal, and observed that she was suffering from a slight cold; he believed that with a little nursing she would be "all right" in a few days. He accordingly wrote a certificate of soundness, informing the purchaser at the same time, that there was no necessity for mentioning the fact of her having a cold,—as he would, he termed it, "have a clean bill of health to produce," should he wish to part with her afterwards. I suggested that he had acted wrongly in writing such a certificate, with the glaring fact before him. He went on to say that the mare was purchased in the month of September in the previous year, five months before; that she was nursed as advised by him, and she became worse daily; that a veterinary surgeon was summoned to attend her; also that several other veterinary surgeons had seen her—some being of opinion she had Glanders, and others that she had not.

The mare was ridden or driven about in practice by the doctor, until he was induced to believe she was suffering from Glanders, when he considered it high time to settle the question. The veterinary surgeon who had the mare in charge inoculated an ass, I was informed, with the matter taken from the nostrils of the mare, and awaited the result. A neighbouring veterinary surgeon then examined the animal, and undertook to cure her if sent to his place, and he guaranteed to send her back *restored to health* in a month. The ass proved to be glandered, and was killed; still the veterinary surgeon was sceptical; he believed he had the power of making a cure. At length lawyers were enlisted into the service, and it was decided by the plaintiff that the mare should be destroyed on the day I was instructed to go and see her, and that my decision should be final on the part of the defendant. I observed five or six gentlemen at the place of

consultation, and the mare was examined by all of us. I directed the attention of my friend, and that of the veterinary surgeon who promised to cure the animal, to what I considered positive indications of Glanders. My friend said he believed it was a curable case. I remonstrated with him as to the danger of his opinion, and advised him to purchase the animal and place her under treatment, as he could then carry out his views in any manner he felt disposed, and the plaintiff would be satisfied, without having her destroyed.

After a little persuasion, he consented to take the advice I had offered, and bought the mare; which, I need not say, relieved him of much anxiety. He placed the animal under the care and treatment of the veterinary surgeon who believed he could restore her to health; and this gentleman promised to do his utmost in effecting a cure—and, further, that he would write me a full account of his treatment and its results.

He wrote in substance to me as follows: "I have tried everything the pharmacopœia suggested for five weeks, and the mare died in spite of all my treatment. It was the worst case of Glanders I ever saw." This case is a most interesting one, from the fact that several veterinary surgeons had opportunities of examining the animal in various stages of the malady, and their opinions varied; inasmuch as some believed the disease was non-contagious, and readily cured by proper treatment; whilst others were of opinion that the animal was suffering from that dreadful disease "Glanders." I have employed the term "dreadful" from the fact that man sometimes will contract the disease, and death follows. It may be asked why it is that Glanders is not more frequently communicated to horses, as well as to those who attend to them. My reply is simply this: that actual contact or inoculation is necessary in order to produce it, and inoculation must, of necessity, take place upon broken skin, an abraded surface, or mucous membrane.

It may be remarked that it is the general belief that horses cannot communicate Glanders through the breath. The late Professor Sewell and others have proved this beyond doubt. This accounts, in some measure, for the fact that a glandered horse may, with impunity, stand in company with healthy

animals. It is not advisable, however, to incur the risk; as it is possible the contagiferous matter may find its way to the mucous membrane of the nose.

PROFESSIONAL CONSULTATIONS.

BY W. FIELD, JUN., M.R.C.V.S., LONDON.

IT has often occurred to me that the practice of consulting in urgent, difficult, or unusual cases, is very little cultivated by veterinary surgeons. Why is this? Surely if physicians and surgeons find that they and their patients are benefited by getting a second opinion, we of all people ought to. I see no reason why there should not be consulting veterinary surgeons as well as consulting surgeons, physicians, etc. Cases must of necessity arise in which the practitioner is more or less puzzled or in doubt (no matter whether in a large or small business), when he would be very glad of a good sound opinion to confirm his own, or to correct him should he chance to be in error. Besides, in many instances, it would relieve him of great responsibility, and at the same time give confidence to his employer. There was a time, no doubt, when there was a great deal of jealousy about allowing another veterinary surgeon on the premises where a case was under treatment, through a dread that the owner should transfer the case to him. I trust, however, that the day has gone by when a veterinary surgeon, called in as a second opinion, would try to get the case into his own hands. My object in directing attention to this matter is to increase the emoluments of the leading members of the profession, whose fee will of course be paid by the owner of the animal, as, though he or they will be sent for at the suggestion of the gentleman in attendance, it will only be with the sanction of the owner. The practice of consulting would, I feel sure, very much strengthen the position of the younger members of the profession; and more especially as they would in a doubtful or difficult case only have to suggest to the employers that somebody should be called in to elicit an expression of approval of what had been done. In such a case, no matter what happens, the practitioner cannot then be blamed; whereas,

if not satisfied, and the owner thinks it advisable that somebody else should be called in, and the case does well, nothing more will be said. If, however, it does not progress favourably, it will be difficult to argue against the fact that the best opinion was obtained.

GLANDERS.

On March 23rd we received the following communication from Messrs. H. and A. Hunter, veterinary surgeons, of Newcastle-on-Tyne :—

"We have forwarded, for your examination, several morbid parts from a horse suspected to be affected with Glanders. These consist of portions of the head, the submaxillary gland, a small quantity of pus from the maxillary sinus on the left side ; also two small jars—one containing portions of the left lung, and the other filled with blood.

"The following is a short history of the case :—Our attention, as inspectors for the borough of Gateshead, was called to this animal five weeks ago. We found him to be aged, very low in condition, and unthrifty in appearance; the submaxillary gland on the near side was enlarged ; and there was a sticky, yellowish discharge from both nostrils, particularly the left one. The Schneiderian membrane had an unhealthy bluish appearance, but no ulceration could be seen.

"The horse fed moderately well, but his condition did not improve. The enlarged gland varied considerably in size, sometimes being as large as a hen's egg, and at other times it was much smaller; it was not firmly adherent to the jaw.

"The breathing at times was of a snoring character. There was little or no cough during the whole period; we only heard him cough once, and the attendant had never heard him. On auscultating the chest, we could detect a crepitating sound, more particularly at the inferior part of the left lung. We had him completely isolated, and he continued with very little alteration in the symptoms until this morning (21st), when, by our advice, he was destroyed. The maxillary sinus of the left side

was found to be filled with viscid yellow pus; the other sinuses were healthy. On inquiry, we found that another animal had been destroyed, on the recommendation of a veterinary surgeon, as suspected of being affected with Glanders. In this instance there was, unfortunately, no *post-mortem* examination.

"This horse had been bought out of a stable in which Glanders had been present for a considerable time, and from which a great many had died or been destroyed.

"Will you kindly give us your opinion of the case at your early convenience?"

The portions of lung forwarded were characteristic of Glanders in the chronic form. The nasal mucous membrane, in its upper part, showed most marked ulceration; and in some places it was not only ulcerated, but the subjacent bone was also affected. From the examination of the parts, there could be no doubt whatever that the animal to which they belonged was affected with Glanders. The result of the inspection having been communicated to Messrs. Hunter, they, under date of March 27th, write:—

"We are glad to find that you quite confirm our opinion of the case. We would not have hesitated to condemn the animal from the first, had there not been an exactly similar case, both as to history and symptoms, recently tried at the Hexham Police Court, in which the decision was against its being Glanders (see February No. of the *Veterinary Journal*). Since we last wrote to you, we learn that the case referred to, in which no *post-mortem* examination was made, was a confirmed case of Glanders."

THE USE OF THE ECRASEUR.

BY A. O. F. COLEMAN, V.S., OTTAWA, CANADA.

As I observe that very little notice has been given as to the employment of the *écraseur* in England, I am desirous of drawing attention to this exceedingly useful instrument—useful in so many ways, but more especially in castration.

In the year 1872, it was brought to my notice while on a visit

to the United States. I there found that in the State of Kentucky it was in common use; and its efficiency was so highly spoken of, that I was led to purchase one. Previous to this date I castrated by means of the cautery and ligature, but since then I have used only the *écraseur*, castration by it being less painful than by any other method. I believe I was the first veterinary surgeon to employ one in Canada, but now the instrument is extensively resorted to; and since commencing its use I have much pleasure in recording that I have not had a death from the operation, though I have operated extensively both on old and young animals.

To those members of the veterinary profession who have not tried it, I earnestly recommend its employment, feeling assured that one trial will suffice to convince the most sceptical as to its utility.

TOXICAL EFFECTS OF BUCKWHEAT.

BY J. B. MARTIN, M.R.C.V.S., ROCHESTER.

ON September 11, 1870, Mr. W. H. Nicholson, of Hoo, Kent, hurriedly sent for me to examine three hundred and seventy-eight lambs, which were supposed to be affected with Sheep-pox. On arrival at Hoo, I made inquiry into the history of the outbreak, and was informed that the lambs had been badly kept during the whole of the summer, for two reasons—the farm was over-stocked, and the summer had been one of the driest known for many years. The lambs were, consequently, in very low condition; and the bailiff, thinking it would give them a good start for the winter, placed them, at the commencement of September, in a field where there was a good growth of buckwheat. Here they soon began to exhibit symptoms of giddiness—in fact, of intoxication; and they fought and butted each other, behaving generally in a most extraordinary and un-lamblike manner. Soon their faces and heads broke out in sores and ulcers, while their ears also became ulcerated, but did not drop off. A great many of them became blind, owing to the swelling of the eyelids

completely excluding the light: not only this, but in some cases the eyes became ulcerated, and were totally destroyed. There was also a muco-purulent discharge from the nose; the lips were swollen; the appetite was entirely in abeyance; and the sun and flies appeared to terrify them exceedingly. Nine of the number died.

On examination, I found the symptoms were still much as described above. There was no papular eruption inside the thighs, nor on other hairless places, which would have been the case had the malady been Variola.

To prove that the buckwheat was the cause of the mischief, I may mention that fifty-seven lambs of the same lot were not placed in the field where this crop was growing, and they remained perfectly healthy. With the view of ascertaining whether there was any contagious element in the malady with which the poor creatures were affected, I had eighteen sound ewes to cohabit with them, but there was no transmission of the disease.

Every circumstance connected with the outbreak tended to establish the opinion I had formed, that the buckwheat had given rise to the peculiar symptoms manifested by these lambs, which were predisposed to its toxical effects by the low condition they were in when driven into the field.

The ulcerations were dressed with a weak solution of carbolic acid, and the lambs received small doses of Ferri Sulph. Gentian, and Spts. Terebinth, mixed in water.

[We are not aware that any accidents from the use of buck-wheat, beech-wheat, or "Saracen corn," as it is sometimes called (*Polygonum fagopyrum*, or *Fagopyrum esculentum*), have until now been reported by physicians or veterinarians in this country, where it is chiefly cultivated for pheasants and other game; though in the United States, Japan, Cochin China, and Belgium, it is greatly used as an article of human food. It is true that in the *New Farmers' Calendar*, published many years ago, it is mentioned that it has produced a stupefying effect on horses; and Banister, an agricultural authority, asserted a long time since that the *haulm*, cut while the plant is in flower, has a peculiar inebriating quality. He had seen hogs, after feeding heartily on it, return home in such a state of intoxication as to

be unable to walk without reeling. But nothing definite as to the physiological or pathological alterations the plant produces has been made known in England, so far as our researches extend. On the Continent, however, it has been known for a long time that buckwheat will cause blanching of the skin of the pig and wool of the sheep. In cattle and horses it has also been observed to produce an erysipelatous eruption, particularly of the white portions of the skin, with, at the same time, symptoms of cerebral congestion, sometimes followed by death in a few hours. It is said that this decolorizing and toxical influence is most powerfully exerted during dry, bright weather. Allusion to these effects is made in *Veterinary Sanitary Science and Police* (vol. i., p. 64). Foreign veterinary literature contains many instances of accidents occurring to animals which have fed upon buckwheat. In the *Annales de Zootechnie* for last December, certain facts are communicated which demonstrate that flowering buckwheat will produce functional disturbance in animals which have consumed it. In the *Bulletin* of the *Comices* of the Eure-et-Loir (France), for April, 1873, and January, 1875, several new examples are given of its noxious effects on the bovine and ovine species, as well as on poultry. From these it would appear that the plant is not only injurious when in flower, but also in the condition of *paille sèche* and *battue;* and that when fowls are exclusively fed on the seed for some time, they become unwell. Professor Cornevin, who communicates these instances to the *Journal de Médecine Vétérinaire* of Lyons, while not disposed to doubt the correctness of the facts, asks if the accidents are not rather due to the exclusive and prolonged alimentation on buckwheat than to anything noxious in the plant itself.

Mr. Martin kindly acceded to our request to publish this account of the outbreak at Hoo, notes of which he had fortunately kept. The buckwheat was probably nearly ripe, or at least in full flower, when the lambs were turned in to eat it. The occurrence demonstrates the importance of studying the influence of different kinds of food in the production of disease.]

PLEURO-PNEUMONIA IN PIGS.*

BY A. R. COLMAN, STUDENT OF THE ONTARIO VETERINARY COLLEGE.

IN the summer of 1875, while practising with Mr. John F. Smith, V.S., of Simcoe, Ontario, the above disease first came under my notice; and being, I believe, of rare occurrence in Canada, I will, to the best of my ability, endeavour to give the history, causes, symptoms, and treatment, and any other matters in connection with the case as far as it came under my observation.

About the early part of June, it was reported that some disease had attacked the herd of hogs of Mr. W. R. Shearer, at his cheese factory at Rockford, situated about ten miles from Simcoe, and that they were dying off in great numbers.

Shortly afterwards, Mr. Shearer called on Mr. Smith, and asked him to visit the hogs, in order to discover if anything could be done for them. So the next day we went to Rockford, and saw them.

Mr. Shearer is the proprietor of the Rockford and Villa Nova Cheese Factories; and every spring, when cheese-making commences, he buys up a sufficient number of pigs to consume the whey during the summer; and later on a certain amount of bran and chop-stuff is added to the whey and given to them, so that by autumn the hogs are fat, and are then disposed of.

The history of these pigs, so far as is known, is as follows:—Mr. Shearer, through an agent, bought two hundred green hogs, purporting to come from Wisconsin, U.S., to be shipped from Chicago to Brantford, Ontario. I think this was about the middle or latter part of April. On arriving at Brantford, they were driven the same day to Rockford, a distance of about fifteen miles, and left over night in a low, damp, unsheltered, fallow field, without anything to eat; the weather at the time being quite cold and inclement.

The attendant stated that the next morning they appeared to suffer very much from cold and exposure; and on peas being

* Read before the Ontario Veterinary Medical Association.

offered, they took little or no notice of them. Whether this was from sickness, or from their not being accustomed to peas, it would be rather difficult to explain; but from their being Western hogs, perhaps if corn (Indian corn) had been offered to them instead, they might have indulged greedily enough.

I might here mention that in previous years Mr. Shearer had procured his hogs in Canada, and was always very successful with them.

The attendant said that although they did not appear to care much for the peas, they ate large quantities of earth, or rather clay—for the soil is very stiff clay; and on examining some dried fæces that were shown us, it appeared to consist exclusively of earthy matter, like hard-baked clay.

They took readily enough to the whey feed, and after a few days all appeared to be doing well, and continued to do so for a few weeks, with the exception that some of them were troubled with a cough. But in a very short time afterwards worse symptoms appeared; they got off their feed—diarrhœa set in—or, in some, very obstinate constipation, with difficult breathing and vomiting; and when the warm weather appeared, they commenced to die off very rapidly; so that the attendant's duties of feeding were somewhat perverted, and grave-digging and burying soon claimed the greater share of his attention.

By this time Mr. Shearer was greatly alarmed at his loss; and there was also considerable excitement in the surrounding neighbourhood—the people thinking that some very serious epizoötic disease among the pigs was about to break out, and which might spread over the country.

In his dilemma, Mr. Shearer had called in the services of two or three different parties to treat the hogs—but without deriving any benefit, as the animals continued to die off as fast. At this time very nearly the half of his herd of two hundred had died, and a considerable number were still sick; so of course he naturally felt very much discouraged, but thought he would again try if anything could be done to arrest the fatality, and save some of the remainder. He then applied to Mr. Smith, as before stated; and hence the cause of our visit.

We found the animals—that is, those that were affected—

presenting anything but a healthy appearance. In the centre of a field to which they had access was the remains of an old straw-stack; and on this the affected pigs persistently huddled together, endeavouring to bury themselves in the litter. This appeared a very favourite place with them, and seemed a regular hot-bed of infection: many would die there; others would get off by themselves, and lie and die under and in fence-corners. The remains of the straw-stack we condemned, and fired at once—of course after first moving out the lodgers.

The following symptoms were observable:—When disturbed, a very distressing, dry, hacking cough came on; some would vomit; rigors and dulness were more or less present; there was great general debility; and most of them offered a very emaciated and tucked-up appearance about the abdomen. Some were constipated; others had diarrhœa; and some exhibited a red or purplish appearance on the under parts of the belly, and particularly between the fore-legs and on the neck; while some, again, appeared unusually swollen or enlarged about the lower jaws and throat. This was stated to be particularly noticeable in the early stages. There being no dead hogs above ground very near to us, and as evening was approaching, we did not make a *post-mortem* examination; but from the general appearance of the animals, and their history, Mr. Smith was led to think it was what is generally known as "Hog Cholera"—"Anthrax"—though he did not like to give a decided opinion until he had seen them again, and had made a more careful examination.

The next day we went again, and opened two or three of the dead, and also killed one of the affected ones, making a very careful *post-mortem* examination of them. In all we found the greater portion of the lungs more or less congested, much hepatized in some, and involving both the lung-texture and pleuræ. In most there was also a considerable quantity of pus in the lung; and in some were abscesses ulcerating completely through the lung-substance. There was likewise a considerable quantity of effusion present, and the lung was also more or less attached to the side in places. All the other organs were normal. After this Mr. Smith had no hesitation in pronouncing the disease to be Pleuro-

pneumonia. In this decision I also concurred. On that day we drenched about thirty hogs with gentian, ginger, sulphur, and sulphate of magnesia, separated all that appeared affected, and directed them to be kept apart.

The distance from Simcoe being too great to attend the animals daily, or as often and regularly as desirable; at the request of Mr. Shearer, and for my own information, I took charge of them, staying at that place for some time.

I first divided them into several lots, according to the stage at which the disease had arrived. The healthy ones I had removed into a large meadow, sheltered on two sides by woods, and having a stream of water in it, and plenty of grass. This lot I had taken up at first once a-day, after a time twice a-day, to get whey and meal, and their tonics in it. Most of the others, the affected ones, I had to drench; and these were kept in small pens. I might here remark, that to write or talk about drenching pigs, and doing it, are two very different things—especially a lot of large, coarse, half-wild Western hogs; and anybody not accustomed to handling pigs will soon find out that it is anything but an agreeable or easy task.

I believe, when I first took charge of them, that about one hundred and fourteen had already died; and I lost six after that, making a total of one hundred and twenty dead out of a herd of two hundred. I think we treated them for about five weeks.

I will now endeavour to give the general symptoms that came under my own observation. Rigors, dulness, loss of appetite or depraved appetite—often eating each others' excrement; short, hard, dry, hacking cough—would often cough up through one or both nostrils mucus, or coagulated blood, and sometimes lung-tissue. In some cases there was swelling about the lower jaw, general debility, respiration much affected, a quick, spasmodic, jerking kind of laboured breathing, constipation or diarrhœa—when the latter, the fæces were usually black and extremely offensive; the abdomen presented a tucked-up appearance; and towards the last stages the animal became very emaciated. In walking there was a staggering gait, often crossing the hind-legs, and sometimes falling, and an inclination to lie in moist damp places. The disease usually began with loss of appetite, rigors,

dulness, cough, and the swelling of the lower jaw and throat; concerning but this latter was not always present. I can say but little the pulse; for taking the pulse of a pig is much easier talked about than put into practice.

The general treatment I pursued was about as follows, though somewhat modified to suit different patients:—In the early stages, when the breathing was very bad, I gave Fleming's tincture of aconite, eight or ten drops, till I got up to twenty drops, and even with some to forty-five drops, and with good results—as well as potassium nitrate in ʒj doses; and for a fair-sized hog I gave gentian ʒj, ginger ʒj, and about every alternate day either sulphur or magnesium sulphate ℥j to ℥ij; purgative doses were given in greater quantities until the effect was produced. After the first stages were passed, sulphate of iron in ʒss doses was administered daily, and after a time every other day or so. Great benefit was derived from strong counter-irritants applied behind the shoulder; these were composed of mustard, turpentine, and strong liquor ammonia. I found it necessary to cut off the coarse stiff hairs from some of the pigs with scissors, and then rub the blister well in with a flat stick once or twice a day. I observed that, if the animal was very fat, little or no effect was produced; but if only moderately fat, the creature would evince much pain after the second or third application—using his vocal apparatus with good effect.

Regarding the causes, Mr. Smith attributed the disease to the fatigue and alternate heating and chills from their being overcrowded in the trucks during the journey; they probably might have gone a considerable time without food or water; and other incidental hardships of travel, coupled with the long drive from Brantford, and the after exposure, especially during the first night, in the above-mentioned fallow field. All or either of these circumstances might have so weakened the system, as to have rendered the pigs predisposed to take on pleuro-pneumonia when exposed to certain exciting causes.

I might here state that several sows gave birth to dead fœtuses, only partially developed, and dried and shrivelled up; one of these is now in the museum of the Ontario Veterinary College. They came at the same time, and in the same litter,

with live and properly developed pigs. No account is taken of these litters, as it is noticed that whey does not favour the production of milk sufficient to rear the progeny. The new-born are generally knocked on the head, and the crowd of pigs is allowed to eat them; this they will readily do when these are dead, but they will never, as a rule, kill or interfere with a live new-born pig, so long as it can struggle about and cry; but a sow will often kill and devour her own young. The death of the fœtuses might be attributed to the deterioration of the sows' system from the above-mentioned causes.

I opened the carcases of all the pigs which died after I took charge of them; and in these I found the *post-mortem* appearances just described. One pair of lungs weighed five pounds.

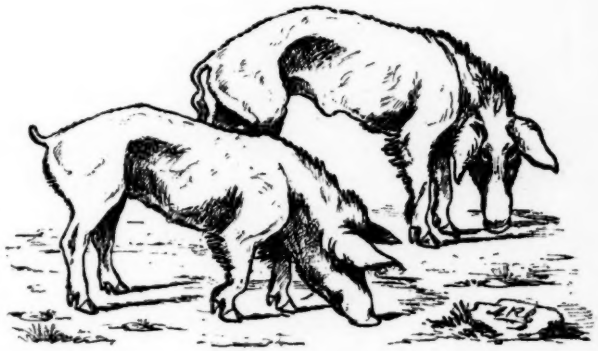

FIG. 9.—CONVALESCENTS.

This sketch, drawn from life, represents some of the worst cases; though almost living skeletons, they throve well, and made heavy hogs by autumn.

The rest of the herd of eighty hogs did well, and were well fattened by autumn. Even some of the worse patients picked up, and made heavy hogs.

I wrote to a person in Wisconsin, U. S., to ascertain if any disease among pigs was present there, but was answered in the negative.

I might here mention that there were a good many well-bred

hogs among the herd—principally Berkshires; and these appeared to suffer most, to be earlier affected, and to succumb to the disease sooner than the coarse-bred ones. They were also in better condition than the latter.

TRANSMISSION OF RINGWORM (*TINEA TONSURANS*) FROM HORSE TO MAN.

THE transmission of the epiphytic disease, *Tinea tonsurans*, to man, though long ago fully established as possible, yet is not so common an occurrence as to justify us in withholding from publication an interesting case which has quite recently come immediately under our own personal observation.

A short time ago, Lieutenant P—— belonging to the mounted portion of the Royal Engineers, purchased as a charger a well-bred, fine-skinned brown horse, five years of age. A few days after the horse joined, a few small "pimples," supposed to be due to surfeit, were observed on the left side of the croup and quarter, but nothing was thought of them. Soon, however, in consequence of the rapidity of their spread, our attention was directed to them; when we found the skin in the region named closely sown with patches and points, due to the rapidly fructifying conidia of the *Trichophyton*. The largest of the patches did not exceed the size of a sixpence, and many of the points were so small that they could only be discovered by passing the fingers over the skin. On the neck and head some little patches were found. The disease had evidently been in existence for a long time, as numerous jet-black tufts of hair, evidence of previous cutaneous implication, were noticed all over the body.

The horse was isolated, and directions were given to wash the skin with warm water and soft soap, using a brush to the affected portions, which were afterwards dressed with an ointment composed of equal parts of Stockholm tar and lard.

About the middle of March, the groom who had attended the horse since its arrival in barracks, came to us to know whether a sore place on his arm was due to the disease which had affected the animal's skin. There undoubtedly was an

unmistakable patch of *Tinea circinata*, measuring one and a-half inch in diameter, on the inner aspect of the right arm, a little above the wrist. The patch was regularly circular in outline, the margin being well defined ; the base was much inflamed, particularly at the circumference ; there were no vesicles, these having in all probability been ruptured by the bandage which had been wrapped round the arm. The irritation had been so great as to excite pustulation in the centre of the patch, where, as well as at the border, there was so much infiltration as to raise the diseased portion of the skin above the surrounding level ; here and there were whitish scales covering the infiltrated surface. This pathological condition of the cutis had only been in existence for two or three days ; and the growth of the fungus had been so rapid, that the groom himself was astonished at the speed with which a little red spot had become a large sore place. He was sent to be treated by the regimental surgeon.

Within the last three years we have been called upon to treat several cases of Ringworm in the horse, and two of these have proved so obstinate, that we are not inclined to look upon the affection as, in every case, one to be easily got rid of. The two cases which proved so obstinate must have been of long standing. They joined at Chatham, with the disease fully developed. One (an officer's horse) with four large patches on the breast,—another a trooper, with the pasterns covered with the parasite, as well as different parts of the body. In both cases the hairs were destroyed, and the seat of the *Trichophyton* remained hairless, the blemish being most marked.

We have found no application succeed so well as the Stockholm tar.

ARMY VETERINARY SURGEONS.

BY "A VETERINARY SURGEON."

IT is rumoured that the Army Veterinary Department is likely to be placed on a more satisfactory footing than at present, and that something will at last be done to improve the pay and position of the veterinary surgeons. They have long been com-

plaining; and no wonder, when we consider how insufficient their pay is to meet the requirements of their position.

For the benefit of the young members of the profession, the following short statement is given, to enable them to judge whether they possess the requisite means to live with comfort in the army.

The pay of a veterinary officer on joining, and for the first five years, is only ten shillings a day; but of this, if in a regiment, he has to forfeit twenty days' pay annually as subscription to mess and band; he has to provide and keep up expensive uniform, and horse appointments; to pay two servants (soldiers), who will each cost him sixpence a day; he has to furnish them with plain clothes; and he has also other numerous and unavoidable expenses.

If in the cavalry, he has also to pay for forage for two horses at eightpence-halfpenny a day each, and also one shilling a day for his own washing and the cleaning of his room. This last charge in other branches of the service is not so heavy. As the allowance of fuel and light is not sufficient, they also are a source of expense. On an average, a change of station may be expected every year, which also entails an extra outlay.

The military veterinary surgeon, then, has not much money left for food, clothing, and pocket money, to keep up his position as an officer; therefore he who joins without private income must be prepared to live very frugally indeed.

The above is a statement of the expenses of a bachelor; of course, for the married officer they are much greater, and the latter in addition has often to pay for house-rent.

The worst of the young veterinary surgeon's position on his present inadequate pay is, that, by his want of means, he is often cut off from living at mess, being usually excused from doing so, by the kindness of the commanding officer, when permission is requested. This exemption, however, in dull stations causes him very many lonely and weary evenings, especially if he is not able to kill the time by reading and study. If, on the contrary, quartered where there is much amusement, as in some large towns, he is exposed to temptations through being so much alone and thrown on his own resources.

It is obvious that the sum of ten shillings a day is inadequate to keep up the position of the veterinary officer. It is most important that the young army veterinary surgeon should be able to live, if he wishes it, at mess, and it would be most advantageous to him to do so. At mess he has the very great benefit of the society and good example of officers of experience, who can advise and teach him. It is one of the strongest arguments for the retention of messes, that the young officer is subject to the above influences, at a time when he is peculiarly liable, from youth and inexperience, to go astray; and he should, therefore, be encouraged from the *very first* to look upon the mess as his home. How important is such a school to young military veterinary surgeons, and how many of them during the first few years of their service have struck on the rock of inexperience from want of good advice and guidance!

Various sums have been named on which the young army veterinary surgeon could live as befits his position, but it seems certain that he cannot do so *creditably* on less than the present sum given to the medical officer on joining, which is £250 a year. Any less amount will only be a makeshift, and will still leave the veterinary surgeon in a false and humiliating position.

The older veterinary officers anxiously look forward to a much-needed increase of their pay and retiring allowance. The price of everything since their last Warrant in 1859 has so gone up, that they are now in a state of *comparative poverty*. The increase of their pay is at long intervals, and when it does come, is very small indeed.

The price of army remount horses has within the last few years risen from thirty to forty pounds each; they are every day becoming more valuable, and the property and responsibilities entrusted to the skill and care of the veterinary surgeon are very great. Parsimony here will only be poor economy; and to induce well educated and skilful veterinary surgeons, by the offer of adequate pay and position, to seek service in the army, will be found by far the cheapest and best policy.

Editorial.

COMPARATIVE PATHOLOGY AND MEDICAL SCIENCE.

It has often struck us as something strange and inexplicable, that Comparative Pathology should have attracted so little attention from those who devote their life to the study of medicine, especially in this country. The necessity for making a knowledge of the diseases of animals a part of medical instruction has never been recognised; and this oversight, it cannot be denied, has operated most powerfully in retarding not only veterinary science, but human medicine itself. So close are the relations between man and animals in every-day life, and so alike, and yet so dissimilar, are their diseases, that one cannot but feel amazed on reflecting that what should constitute an essential portion of a medical man's education is utterly ignored; at the same time, he is compelled to make himself acquainted with subjects which are of infinitely less utility or importance for a due comprehension of pathological laws, and aid but little in training the mind to observe and compare.

This neglect of a most interesting, instructive, and useful branch of medical science, is greatly to be deplored; and veterinarians, as well as medical men, are entirely to blame for the omission. An esteemed friend, who can lay claim to a high position in both departments of medicine, wrote to us a short time ago on this subject, and his views appear to be entirely in harmony with our own. He writes: "That men should confine themselves to curing what they please to call the 'lower animals' to the exclusion of mankind, and the reverse, I cannot and never have been able to understand; and I hope the day will soon come, when he who medically treats mankind may be looked upon as a dangerous specialist, if he has not attained his position by a comprehensive study of the diseases of the 'lower animals.' That the sister profession of 'human' medicine should recognise the advantage of a knowledge of comparative anatomy and physiology, and overlook the vast and unspeakable advantage of a knowledge of comparative pathology, is really inconceivable."

And Dr. Bell Pettigrew, in a lecture recently published, asserts that "no one can intelligently administer medicine to a human patient who is ignorant of the effects produced by it on the lower animals. A perfectly educated physician should also be master of the veterinary art."

If this dictum be correct, and we are of opinion that it cannot be gainsaid, then this country at least has never produced a perfectly educated physician. Nay, we may go beyond this in declaring what our experience has led us to believe as true, that very few physicians indeed know anything whatever of the diseases to which animals are liable, their symptomatology, or the pathological alterations which differentiate or mark their presence.

This lack of knowledge of comparative pathology has at times led to most lamentable results. We need only refer to what occurred during the Cattle-plague invasion of 1865, when medical men who knew but little, if anything, of this or other animal maladies, assumed the serious responsibility of pronouncing as to the nature and treatment of the scourge. The painful and costly mistakes made on that occasion are now matters of history; while the composition of the Royal Commission which attempted to arrive at some conclusion as to what this well-known pestilence really was, shows that the public entertains the erroneous notion that to be a distinguished member of the medical profession is also to be a competent comparative pathologist.

It is just possible that the almost unpardonable neglect of animal pathology in this country by medical men, may be greatly due to the very inferior position which veterinary medicine has hitherto been allowed to occupy—a position which may have inspired the belief that there was something degrading in everything connected with it, and that it was to be avoided. It may also be partly ascribed to the unfortunate tendency of those who have chanced to be placed in a position to represent veterinary science, to acknowledge their incompetency to deal with the more intricate questions belonging to it, and to surrender the task of solving these, as well as carrying out other important duties, to members of the sister profession.

The advantages which human medicine must derive from careful investigation of the diseases of animals, may have been present to the minds of those distinguished physicians and surgeons who lent their aid and countenance in establishing the first veterinary school in Britain, and who were instrumental in placing an able colleague at the head of it, and encouraging his efforts in this direction. But with the death of Coleman, the connection between human and veterinary medicine may be said to have suddenly ceased; the school lost its claim to recognition as anything more than an establishment where a very superficial knowledge of some of the diseases incidental to horses, and, to a much smaller extent, to cattle, might be obtained. At present there is scarcely a member of the medical profession connected with it or interested in it; and we fail to discover that, since it lost that teacher, anything has been done to advance or attract attention to comparative pathology, or to make its importance evident. Veterinary schools should have a higher function than that of merely conferring a smattering of the rudiments of animal medicine. If they do not advance veterinary science (which is, in reality, the science of Comparative Pathology), and make no use of their valuable opportunities, the busy practitioner, with his cares, anxieties, and responsibilities, cannot be expected to effect much in the direction of research and improvement.

The divorce between Human and Comparative Pathology would appear to be complete in this country.

Two or three enthusiasts are, no doubt, exerting themselves to the utmost to demonstrate the close relationship that exists between these; but those who have had most experience will, we are confident, endorse our statement, that medical men are lamentably ignorant of the diseases

of animals. Indeed, we may safely say that a well-trained veterinary surgeon is far better acquainted with human disorders than the physician is with those of the inferior creatures, though this is not saying very much in his favour.

It is probable that, in the course of time, this will be altered. At present medical men are of necessity employed to teach at our veterinary schools, for the simple reason, it would seem, that these cannot, in some subjects, train their own teachers. But a change may be effected when the education of the veterinary student is what it ought to be; when the course of study shall embrace thorough instruction in Comparative Pathology and the collateral sciences, and when teachers will be ashamed to confess that they have lost their youthful enthusiasm for their science.

Then we may find at each of our medical schools a chair of Comparative Pathology (as there is of Comparative Anatomy), held by a member of the veterinary profession, as now exists at the University of Brussels, where Professor Wehenkel, of the Belgian Veterinary School, lectures; at the Munich University, where the celebrated Bollinger teaches; at Leipzig University, where Zürn holds the Comparative Pathology chair; at Bologna University, where Count Ercolani occupies a distinguished place; at the University of Vienna, where Röll has established a lasting reputation as a comparative pathologist; at the St. Petersburg University, where, until the other day, the lamented Rawitsch was the exponent of his science; with Roloff at Halle University, Pflug at that of Giessen, and other distinguished veterinarians in nearly every Continental University.

When Comparative Pathology is taught in the medical schools of this country, we shall then be able to say that physicians are receiving complete instruction; and when this tuition is conducted by members of the veterinary profession, as on the Continent, then we shall have no reason to complain, as we are now compelled to do, of the inferior and unworthy position which this great branch of science is forced to occupy, simply because it is neglected or ignored.

VETERINARY SANITARY SCIENCE IN TURKEY.

For several years the Turkish dominions have been most severely scourged by contagious maladies, and very serious losses have been reported from a number of provinces. The Ministry of Agriculture and Commerce has at length determined to adopt measures to protect the owners of animals from the ravages of destructive maladies; and with this object in view, it has organised a Veterinary Sanitary Service, which, modelled, as it is, on what such a service should be if these diseases are to be suppressed, will no doubt achieve great results. This service is composed of veterinary surgeons, who must have qualified either at the Imperial Medical College or some recognised foreign veterinary school. There are three classes of these, whose pay ranges from 1,800 to 750 piastres per month, the vilaets of Mesopotamia, Yemen, and Tripoli

being allowed a much higher rate, however. The principal towns in provinces and districts are each to have a veterinary surgeon, who is paid by the municipality, of which he is a member by virtue of his office. The municipality also defrays, in addition to the salary, all expenses connected with visiting infected localities, as well as medicines.

It will thus be seen that this semi-civilised country is in advance of our own, which promises to be the last to adopt anything like such an organisation, notwithstanding our claims to be regarded as immeasurably ahead of kingdoms like Turkey.

URETHROTOMY IN THE HORSE.

We learn from the *Gazette Méd. de Strasbourg* for 1875 (No. 6), that J. Kopp removed a stone weighing 280 grammes (ten ounces) from a horse's bladder by urethrotomy. The calculus was pushed towards the enlarged urethra by a hand introduced into the rectum, and withdrawn from the wound by means of forceps.

BRONCHOCELE IN HORSES.

Professor Liautard, of the American Veterinary College, New York, recently successfully extirpated two large bronchocele from horses, aged respectively nine and fifteen years. With one exception, says the New York *Medical Record*, no similar cases have been reported for the past thirty-three years.

THE UNITED STATES OF AMERICA AND CONTAGIOUS DISEASES.

The Secretary of the United States Treasury has withdrawn the order prohibiting the importation of neat cattle from Great Britain. He has issued an order allowing the importation of blood stock, when accompanied by a certificate from an American Consul that the animals are in a sound and healthy condition, and entirely free from Foot-and-mouth-disease, or any indications of it.

BRITISH ARMY HORSES.

The deaths among the horses on the British (not Indian) Establishment of the Army, in 1874, amounted to 313, or 21 per 1000.

This high per-centage is commented upon by the *Broad Arrow*, which suggests the query whether veterinary science has yet done, or, rather, has been allowed to do, all that is possible in reducing the rate of equine mortality in quarters. The query is certainly quite justified by such a high per-centage of deaths as is shown above; but we must

remember that the manœuvres—a comparatively recent institution in this country—must be credited with adding largely to the death-rate among army horses. The fatal casualties in this mimic warfare are sometimes serious, and intractable diseases are often engendered by exposure and fatigue.

VETERINARY SURGEONS IN THE UNITED STATES ARMY.

From the "Army Register" of the United States of America, we perceive that there are only nine veterinary surgeons, though there are ten regiments of cavalry and five of artillery. These nine veterinary surgeons are included, not among the officers, strange to say, but among the men!

ANIMAL DISEASES IN SOUTH AFRICA.

It is announced that Professor Brandford, of the Edinburgh Veterinary College, has been appointed by the Government to proceed to the Cape of Good Hope, there to investigate the origin and nature of special and various diseases which prevail among cattle and sheep, and cause heavy losses to the colonists. This is an important and responsible duty, and we are sure Professor Blandford will receive the sincere good wishes of his colleagues for his success in its accomplishment.

VETERINARY SCIENCE AT THE INSTITUTE OF FRANCE.

At the annual meeting held last December, the Institute of France awarded its prizes, and among the *lauréats* we again have the satisfaction of noting the name of Professor Chauveau, who has obtained the Lacaze physiological prize, value 10,000 francs, for his researches into the nature of virulent maladies. Professor Saint-Cyr was honourably mentioned, and received a donation of 500 francs for his *Traité d'Obstetrique Vétérinaire*. The same recompense was awarded M. Cezard, for his *Memoire sur la Méthode Antivirulente*, applied to the anthracoid diseases of men and animals. This young veterinarian died recently, a victim to his devotion to science. We may well contrast this recognition of the efforts of veterinary surgeons to improve their literature in France, with the neglect, or something worse, which it receives in this country.

DISEASE GERMS.

Professor Tyndall has recently delivered a lecture on "Germs" at the Royal Institution, which was, in effect, to the same purport as one delivered before the Royal Society a short time previously. While in

the latter, however, he merely laid the result of his experiments before the meeting, on this occasion he pointed out some of its possible practical bearings when viewed in relation to medical science. The basis of Professor Tyndall's experiments is that, in the course of searching for means of obtaining air free from floating "motes," he found that if air is allowed to remain in a closed air-tight vessel, covered inside with glycerine, in the course of three or four days it deposits all its motes, which adhere to the glycerine, and it thus becomes quite free from them. The test of its perfect freedom is to pass a powerful beam of light through the case, when, if any motes are still floating, they make known their presence by reflecting the light. With air thus purified, Professor Tyndall has made a long series of experiments bearing on the question of spontaneous generation and on disease germs. He has placed test tubes in cases like those referred to, and has arranged to fill the tubes by a pipette, so arranged that it can reach the tubes without admitting external air. The method is to allow the air to settle and purify itself, and then to pour in the infusion down the pipette. At the same time, a portion of the infusion is placed in tubes exposed to the ordinary air. The usual precautions and preparations laid down by those who believe in spontaneous generation are carefully observed. Thus, one sample of an infusion is exposed to the influence of motes, and another sample is protected from them. Over and over again, with different kinds of infusions, the experiments have been tried. The protected tubes show no change, while the exposed tubes soon become putrid, and show signs of low forms of life. Now, though we know nothing about motes of the air, yet the Professor puts it that it is fair to argue thus :—Suppose these motes were so large that we could handle them. If we took two pots of earth, planted some of the motes in one, and carefully kept them from the other; and if we got a crop of cresses and grass from the first, and nothing from the second, we should surely argue that the motes contained the germs of this vegetation. So with these minute motes, and the infusions which favour their development. We allow them to settle in one set of infusions, and get a crowd of life forms; we carefully keep them away from another set of infusions, and get no life. Surely the motes contain the germs among them. In various ways, with sealed flasks, with calcined air, with filtered air, and *in vacuo* experiments, all tending to the same result, were exhibited. Some of the failures in experimenting were referred to, and it was seen how easy it is to be misled into accepting apparent proof of spontaneous generation. In one instance, a tube in one of the cases spilt a few drops of the infusion. It fell on some germs lying on the glycerine, and, furnishing to them a means of development, life forms were soon seen, and a putrefaction on the spot set up. The case being near a stove, which heated it on one side, currents of air were produced within it, and some of the germs got wafted into one of the tubes, and set up putrefaction and forms of life in it. Yet, although this went on for some time, and the evaporation from it was all around the other tubes in the same case, they were not affected. Directly, however, a drop from the putrefying tube was transferred to one of the others, it set up a series of changes at once. From this, Professor Tyndall argues

that sewer gas of itself is harmless; it is the germs floating in the sewer gas that sow disease. If there are no disease germs present, the gas does no harm. Another set of experiments in the horizontal and vertical distribution of motes, led to the conclusion that life germs float in groups or clouds, with intervals more sparsely filled between them; since an immense number of tubes, exposed in different parts and at different heights in the laboratory, showed that some were affected many days before others. Clouds of disease germs may explain a puzzle to surgeons—Why a wound going on well for a while should suddenly, and without apparent reason, become putrid. It may be that it is being dressed just at a time when a "germ cloud" is passing. Even when all the tubes were in the course of time infected, through germ clouds passing successively over them, yet the differences in their contents were extraordinary. All of them contained bakteria; some few, others in swarms. In some tubes they were slow and sickly in their motions, in some apparently dead, while in others they darted about with rampant vigour. These differences are to be referred to differences in the germinal matter, for the same infusion was presented everywhere to the air. Here also we have a picture of what occurs during an epidemic, the difference in energy and number of the bakterial swarms resembling the varying intensity of the disease. It becomes obvious, from these experiments, that of two individuals of the same population, exposed to a contagious atmosphere, the one may be severely, the other lightly attacked, though the two individuals may be as identical, as regards susceptibility, as two samples of one and the same mutton infusion.

The universal prevalence of the germinal matter of bakteria in water has been demonstrated with the utmost evidence by the experiments of Dr. Burdon Sanderson. But the germs in water are in a very different condition, as regards readiness for development, from those in air. In water they are thoroughly wetted, and ready, under the proper conditions, to pass rapidly into the finished organism. In air they are more or less desiccated, and require a period of preparation more or less long to bring them up to the starting-point of the water germs. There cannot, moreover, be a doubt that the germs in the air differ widely among themselves as regards *preparedness* for development. Some are fresh, others old; some are dry, others moist. Infected by such germs, the same infusion would require different lengths of time to develop bakterial life. This remark applies to and explains the different degrees of rapidity with which epidemic disease acts upon different people. In some, the hatching period, if it may be called such, is long; in some, short: the differences depending upon the different degree of preparedness of the contagium.

In his concluding remarks, Professor Tyndall referred to the fact, that it has remained for modern science to discover that, more than by battle, or accident, or famine, humanity suffers from disease germs conveyed in air and water.

THE HORSE AND ITS RIBS.

BY MAX MULLER.

(*The Academy.*)

SYLVIUS said that man had formerly an intermaxillary bone. If he has it no longer he ought to have it. In this he was right. The same Sylvius, in his answer to Vesalius, said that Galen was not wrong when he described man as having seven bones in his sternum, "for," said he, "in ancient times the robust chest of heroes might very well have had more bones than our degenerate day can boast." In this he was wrong.

I take these statements from Mr. Lewes' "Life of Goethe" (p. 343), and I have to confess that I have not verified them. They interested me, however, as bearing on a controversy that has been carried on for some time between scholars and anatomists, viz., whether another animal, the horse, instead of losing, has developed in course of time some bones which it did not originally possess. Horses have now thirty-six ribs, sometimes, it is said, thirty-eight. But there is a passage in the Rig Veda which speaks apparently of only thirty-four ribs in horses. It was M. Piétrement who in his work *Les Origines du Cheval domestique d'après la Paléontologie, la Zoologie, l'Histoire et la Philologie* (Paris, 1870), first called attention to this curious statement, and drew from it the conclusion, supported by some very ingenious arguments, that at the time of the Vedic poets, say about 1500 B.C., there existed a race of horses with only thirty-four ribs. Other zoologists, and more particularly M. Sanson, raised some strong objections, but M. Piétrement replied to them in his *Mémoire sur les Chevaux à trente-quatre côtes des Aryas de l'Epoque Védique* (Paris, 1871), and the question is still *sub judice*.

M. Piétrement's reasoning may best be given in his own words :—

"Je ferai d'abord remarquer que la présence de trente-quatre côtes seulement, sur une race équestre, soit ancienne soit actuelle, ne sarait nullement un fait anormal, en dehors des lois de la nature ; car il est parfaitement reconnu aujourd'hui que le nombre de ces pièces osseuses est loin d'être constant sur nos chevaux actuels. M. Chauveau s'exprime en effet ainsi à propos du nombre de côtes des chevaux : 'On compte pour chacun des moitiés latérales du thorax, dix-huit côtes. Il n'est pas rare d'en rencontrer dix-neuf, avec un nombre égal de vertèbres dorsales, chez les chevaux bien constitués, mais alors il n'existe, le plus souvent, que cinq vertèbres lombaires.'

"D'autre part, on rencontre quelquefois, chez des sujets d'un certain type, 'cinq vertèbres lombaires seulement, au lieu de six qui est le nombre habituel sur les l'espèce *Equus caballus*, avec le nombre des autres pièces du rachis.'

"Lorsque ce dernier fait fut annoncé en France par M. Sanson, il rencontra beaucoup d'incrédules ; mais il est aujourd'hui complétement acquis à la science ; et il est à juste titre considéré comme l'indice de l'ancienne existence d'une race de chevaux à cinq vertèbres lombaires ; chevaux dont le croisement avec ceux à six vertèbres lombaires rend d'ailleurs parfaitement compte des fréquentes anomalies de conformation que l'on rencontre dans cette région du rachis."

Having by these considerations established the possibility of an ancient race of horses with only thirty-four ribs, M. Piétrement appealed for its reality to a passage in the most ancient literary document of the whole Aryan world, the Rig-Veda.

The passage in which the thirty-four ribs of the horses are mentioned occurs in the 162nd hymn of the first book of the Rig-Veda Saṁhitā. I translated the whole of that hymn in my *History of Ancient Sanskrit Litera-*

ture, 1860, p. 553. The hymn is ascribed to Dīrghatamas, and describes the sacrifice of the horse in very full detail. In the eighteenth verse we read :—

"The axe approaches the thirty-four ribs of the quick horse, beloved of the gods. Do you wisely keep the limbs whole, find out each joint and strike."

This passage is curious in many respects. It refutes the statement of Strabo (xv. 54), that the Indians did not slaughter their victims, *οὐδὲ σφάττουσι τὸ ἱερεῖον, ἀλλὰ πνίγουσι, ἵνα μὴ λελωβημένον ἀλλ' ὁλόκληρον δέδωται τῷ Θεῷ*. It also seems to imply that the horses then offered at the sacrifice had only thirty-four ribs. This statement, however, startled even the orthodox commentators in India, and Sāyaṇa remarks in his commentary on this passage, that other animals, such as goats, etc., have only twenty-six ribs, as might be proved by what he considers as far more convincing than ocular evidence, viz., a passage from the Brāhmaṇas, in which it is said, "Its ribs are twenty-six." In another passage, in his commentary on the Śatapatha brāhmaṇa, xiii. 5, 1, 18, Sāyaṇa returns to the same subject, but unfortunately that passage, as edited by Professor Weber, is so corrupt, that I at least cannot make sense of it, though it is clear that Sāyaṇa says there that their ribs are thirty-six. Another commentator, Mahīdhara, explaining the Horse-sacrifice, as prescribed in the Yaǵurveda, seems to have no anatomical misgivings, but states that the horse has thirty-four, goats and other animals twenty-six ribs.

I confess that I was myself very much puzzled by the passage in the Rig-Veda. It was quite clear that the reading *k*atustri*ṃ*sat, thirty-four, cannot be called in question ; it was equally clear that that number would not have been mentioned except for some special purpose. That it was the habit of the ancient Hindus to count the various bones of the human or animal skeleton, may be seen in the Law-book of Yāǵnavalkya iii., 85 *seq.* There we read :—

"The neck consists of fifteen bones, a collar-bone on each side, and the chin ; two at its root, and the same on the forehead, the eyes, and the cheeks, and the nose of firm bone. The ribs with their supports and the Arbudas (*Zippenknorpel*) are seventy-two. Two front-bones, four skull-bones of the head, seventeen bones of the chest, these are the bones of a man."

Similar passages occur elsewhere, and establish the fact that the ancient anatomists of India make a point of knowing the exact number of the bones in the different portions of the bodies both of men and animals.

Not being able to find a satisfactory solution of my difficulty, I applied to Professor Huxley, and I am glad, with his permission, to print the following letter, which offers a most ingenious, and, to my mind, satisfactory solution :—

"26, ABBEY PLACE, N.W.

"MY DEAR SIR,—I have been much interested in M. Piétrement's *Mémoire*. His work *Les Origines des Chevaux Domestiques* is well known to me, but I had paid no particular attention to his incidental mention of the 34-ribbed Aryan horse.

"M. Piétrement's essay raises three questions. The first, Does the passage of Drighatamas' hymn cited, necessarily imply that the horse known to him had only thirty-four ribs? The second, Does the passage from Sâyaṇa imply, that he asserted of his own knowledge that the horses of his time in 1400 A.D. had only thirty-four ribs? The third, Are there any zoological arguments in favour of or against the existence of a breed of 34-ribbed horses?

"1. Your Latin version of the solitary Vedic passage upon which M. Piétrement relies, admits the reading : 'The axe cuts through [the] thirty-four ribs of the quick horse,' etc.

"I speak ignorantly, but suppose I am right in assuming that there is no more 'the' in the Sanskrit than in the Latin. Nevertheless it is upon the presence of this definite article that the question turns. For, without it, the passage may simply mean that the axe cuts through thirty-four ribs out of the thirty-six with which the horse is provided. What makes me think that this may be the proper signification of the passage is the inquiry I put to myself, For what purpose did the sacrificing priest want to cut through the horse's ribs? Surely, in order to disembowel him. But in order to do this no one would go through the great trouble and labour of chopping through the bony parts of the ribs of a horse. Moreover such a proceeding would be incompatible with the objection to mangling the horse's bones, which is strongly displayed elsewhere in the Vedic hymn.

"But every bony rib ends below in a gristly substance, and it is quite easy to cut these 'costal cartilages,' and then turning them back, along with the breast-bone, the cavity of the chest is laid widely open, and the priest readily reaches the heart or the like.

"But if every rib ends in a cartilage there must be thirty-six cartilages and not thirty-four?

"True, but the last pair of ribs is much shorter than the others. It is not needful that all the thirty-six pairs of costal cartilages should be cut through in order to lay the chest thoroughly open; and for sacrificial purposes it may have been inconvenient to cut through more than the thirty-four ribs which lie in front of it.

"If you are laying open a man's chest for a *post-mortem* examination, you go to work exactly as I am supposing the Aryan priest to do. You cut through the rib cartilages on each side and take them away, along with the breast-bone to which they are attached. But, in doing this, you leave at least the last two ribs on each side untouched, because they are free, so that it is not needful to cut them.

"If I were a poet, and made a hymn about a *post-mortem* examination, I might speak of the operator's scalpel 'cutting through the twenty ribs,' without meaning to imply that the man of the period is devoid of his full complement.

"2. Does Sâyaṇa say that the horses of his time had only thirty-four ribs? The passage quoted by you does not seem to me to bear that interpretation at all.

"3. As to the zoological aspect of the question. Horses may undoubtedly vary not only in the number of their ribs, but in the number of their dorso-lumbar vertebrae. The latter may be twenty-four (as usual), or twenty-three, as in the cases cited by Sanson, and also by Leyh in his *Handbuch der Anatomie der Hausthiere;* and the former may be eighteen (as usual) or nineteen on each side. Unfortunately, I know of no case on record (and M. Piétrement seems to have been unable to find one) in which either horse, ass, or other equine animal had *fewer* than thirty-eight ribs. If a 34-ribbed race of horses ever existed, I think it ought to turn up as a variety now and then. But it does not; and what is still more to the purpose, we do not find that any of the immediate allies of the horse have fewer than thirty-six ribs; though they may, as in the case of the ass, have only five lumbar vetebrae.

"Without wishing, in the least, to dogmatise then, I must say that the zoological probabilities appear to me to be dead against M. Piétrement's hypothesis; and unless you tell me that the Sanskrit text must mean that Dirghatamas' horses had thirty-four ribs and no more, I shall take leave to doubt the existence of these 34-ribbed steeds.

"I am afraid I have troubled you with a very long letter, which does not come to much in the way of certainty after all. . . . .

"I remain, yours very truly, T. H. HUXLEY."

I have little doubt that Professor Huxley has solved the riddle. It is open to translate either the thirty-four, or thirty-four ribs ; but whether we adopt the one or the other rendering, it seems clear that the poet must have had some reason for mentioning that number. If thirty-four was the usual number of a horse's ribs at his time, then there seems little reason for giving the number. "Cut the ribs" would have conveyed the same meaning as "cut the thirty-four ribs." If, on the contrary, the number thirty-four was mentioned because it was exceptional, then the poet and his commentators too would have said more about the anomaly. Everything becomes intelligible if we admit that in cutting open the horse, two ribs were not to be cut, so that they might remain and keep the carcase together. In that case to mention the number of ribs that were to be cut had a purpose, though it is strange that tradition, which in India possesses such extraordinary tenacity in unimportant matters, should not have preserved the original purport of the words of Dīrghatamas. I have looked in vain for a passage where the cutting of the thirty-four ribs in the Horse-sacrifice is more fully described; but I ought to add that in the oldest descriptions of the sacrifice of other animals, preserved in the Aitareya-Brāhmaṇa and the Śrauta-Sūtras of Alvarayana, nothing is said of leaving two ribs undivided. "Twenty-six are his ribs," we read : "let him take them out in order ; let him not spoil any limb."

VETERINARY INSPECTORS IN IRELAND.

His Grace the Lord Lieutenant has been pleased to approve of the following Regulations with respect to the granting of leave of absence to veterinary inspectors employed under the Cattle Disease (Ireland) Acts :—

1. When the convenience of the service permits, leave of absence without loss of pay may be granted to any veterinary inspector in the proportion of one day for every twenty-four days of actual and approved service previously rendered, provided that—

(*a*) Not more than twelve days' leave shall be granted under these conditions between 1st January and 31st December inclusive in any one year.

(*b*) In calculating the leave to be allowed, no service previous to the 1st January in the preceding year is to be counted.

(*c*) No inspector may take leave without previously obtaining the express approval of the responsible head of the Department.

2. In addition to the above, the following days shall be observed as public holidays :—

Good Friday.	The First Monday in August.
Easter Monday.	Christmas Day.
Whit Monday.	St. Stephen's Day.

Should any inspector be required to work on any of the above-named days, he shall receive double pay for such day ; but under no circumstances shall such double pay be granted unless the duty performed has been done on the public holiday by the express direction of the responsible head of the Department.

3. Any inspector who has been for one year or upwards on active and continuous service may be allowed sick leave, receiving three-fourths of his ordinary rate of pay, provided that—

(*a*) The illness of the inspector is to be attested to the satisfaction of the head of the Department, by the certificate of a duly qualified physician or surgeon.

(*b*) No inspector shall be paid for holidays and sick leave, amounting together to more than twenty-eight days (exclusive of public holidays) in any one year.

PRESENTATION TO VETERINARY PROFESSORS.

On March 3, a pleasing ceremony was witnessed in the lecture-room of the Glasgow Veterinary College, the occasion being the presentation of a handsome gold watch and chain to Mr. Fordie, Professor of Anatomy, by the students of the present session. Principal M'Call occupied the chair, and was supported on the platform by a number of gentlemen, members of the profession, and others interested. Mr. M'Queen, 138, West Graham Street, made the presentation, and in doing so bore testimony to Mr. Fordie's ability as a lecturer, his general high knowledge of the profession, particularly of veterinary anatomy, and the high esteem in which he was held by all of his students, of the past as well as of the present. The watch, a handsome gold stop-lever, bore the inscription—"Presented to Professor Fordie by the students of the Glasgow Veterinary College—Session 1875-76.—3rd March, 1876." Mr. D. M'Lean, V.S., in proposing a vote of thanks to Principal M'Call, testified to the high ability of Professor Fordie, and congratulated the students on their having such eminent teachers as the subject of his remarks and the recipient of their handsome present. Principal M'Call, in reply, also bore testimony to the eminent position in which Mr. Fordie stood in the profession, and said that if he had an equal as a lecturer on veterinary anatomy, he certainly had no superior.

The students attending the Edinburgh Royal Veterinary College, on March 30, presented a handsome gold watch to Professor Thomas Walley, Principal of the College, in token of their appreciation of the services which he has rendered to them and the College since his appointment to the principalship. The presentation took place in the Council Chambers, where, in addition to a large gathering of the students, many of the members of the Dick Trust, and several gentlemen representing the Highland and Agricultural Society, and other friends, assembled to witness the proceedings. The Lord Provost presided, and in the course of his address said it appeared to him that any one holding the office of Principal in the Dick Veterinary College, if he rightly and properly discharged the duties devolving on him in that office, would have the eyes of Government and the eyes of all men upon him, and whenever a good opening occurred he would be put into it. He thought Professor Walley was the right man in the right place. (Applause.) That he had done his duty, and had been the means of imparting instruction to the students attending his classes, were sufficiently apparent in the mark of respect which they were about to bestow on him. It was a proof of the manner in which he had discharged his duties, and of the manner in which the students had profited under his guidance. (Applause.) As their mouthpiece, he had to say how very much they had appreciated his services, his prelections, and the general fulfilment of his duties. He hoped that Professor Walley would continue so to discharge his duties as to win for himself a still greater share of honour and credit. Mr. George Kidney, one of the students, then presented the testimonial. After thanking his lordship for having granted the use of the Council-room for the occasion, he said that the students having decided that something was due to Principal Walley for his unremitting and untiring energy in promoting the interests of the College, subscriptions were at once obtained for having a suitable testimonial presented to him. On behalf of himself and his fellow students, he presented the watch to Professor Walley, expressing the hope that he might long be spared to discharge the duties of the office which he had hitherto so well and faithfully filled. Professor Walley, in thanking the students for their gift, said it had been a great pleasure to him to endeavour to fulfil his duties in connection with the Dick College, and he trusted he had performed them in such a manner as to meet with the approbation of the members of the trust and of

the students themselves. That he had done so, the present which he had just received was a sufficient guarantee. The students could do him far greater honour if in the present, during their connection with the institution, and in the future, they would do all in their power to make themselves worthy men and worthy practitioners in after-life. Their profession was making rapid strides all over the world, and he hoped they would strive to extend it by their influence. Again thanking them for the honour they had done him, he concluded by saying that hereafter, when he looked at their gift, he would think of them and endeavour to work the harder for it. On the motion of Treasurer Colston, a vote of thanks was awarded the Lord Provost for presiding.

MODIFICATIONS WROUGHT IN THE RED GLOBULES OF THE BLOOD BY SEPTIC INFECTION.

BY DR. A. HILLER.

THE researches of Hiller have led him to believe that, in all febrile diseases, the red globules of the blood tend to assume a more or less stellate shape. He thinks that the opinion of Hüter, who attributed this alteration in form to the penetration into the globules of microscopical organisms, cannot be received as correct, as in a number of cases no organisms have been discovered in the blood. Besides, even in cases in which putrid matters containing multitudes of monads have been injected into the circulating fluid, these have not been observed to act in any way upon the red globules. He also adds that this stellate condition may be, in certain circumstances, produced in healthy blood, and independent altogether of the action of vibriones.

What occurs, in fact, when a drop of blood is examined under the microscope? The globules become stellate wherever the serum is thickened—wherever it is exposed to the air. The same change of form is produced when to the serum is added substances which concentrate it; consequently, the star shape is only a degree of retraction of which the spherical form is the type. These small spherical globules have been the cause of errors, several authorities having considered them as pre-existing in the blood, and as characteristic of an affection which they have designated "Microcythemia." But in the febrile state, it is because the serum is thickened that the globules assume the stellate form.

UTILITY OF CARBOLIC ACID IN SKIN DISEASES AND WOUNDS.

BY BÜHL.

BÜHL strongly recommends carbolic acid as a calmant of pain and pruriginous sensations, in the most diverse diseases. With Hüter, he is also of opinion that injections into the connective tissue of an aqueous solution may prove very usful. For allaying pain and prurigo, Bühl employs, on the intact skin of very sensitive animals, a solution of one to five; if the sensibility is less, then a solution of one to two. Sometimes he even employs it in a pure crystalline condition. For the primary applications, alcoholic solutions are preferred; afterwards use is made of solutions in oil or glycerine.

In the treatment of wounds an aqueous solution of one to fifty, or even one per cent. generally suffices; but for the treatment of fistulæ, more concentrated solutions are preferred—on to twenty-five or to ten.

Hüter used for parenchymatous injections, a solution of 2·00 acid to 100·00 of water, and injected 0·9 of this solution (0·02 acid) at one time.

Reviews.

DIE RINDERPEST (THE CATTLE PLAGUE). By H. F. S. Unterberger. Dorpat, 1874.

In a pamphlet by Unterberger, published at Dorpat in 1874, we have another addition to the immense amount of literature pertaining to the terrible and terrifying disease, "Cattle-plague." Unterberger is a teacher at the Veterinary School at Dorpat, and had given this redoubtable malady the most careful study for many years. As is well known, for a long time experiments have been conducted in Russia with regard to inoculation as a protective measure. Observations for more than a century have shown that cattle rarely suffer from more than one attack, and that when the disease is induced in them, naturally or accidentally, they are exempted from another invasion. Unterberger is of opinion that inoculation will never be a recommendable measure for the suppression, or rather extinction, of the plague in Russia. He thinks that safety does not lie in the benefits to be derived from this operation, but is to be sought for in a good veterinary organization throughout the whole of the Russian empire; to this end he gives us some valuable information with regard to the advanced condition of veterinary instruction in that country.

Unterberger points out, that while protective or preservative inoculation was tried in Western Europe in the last century, it was not attempted in Russia until 1833, when Makowski inoculated so many cattle that the Government had to interfere, on the pretext that he was spreading the disease. In 1834, Jessen entertained the opinion, which he partially carried into practice, that by inoculation the malady might be extinguished in Russia; and, at a later period, the Government sanctioned experiments in several regions, Unterberger being appointed to superintend one series in 1842, and several veterinarians being designated to conduct others at the same time. In 1863, Roschnow published the first official report of these experiments, which in its conclusions was not very favourable to the practice, as it proved that cattle which did not take the disease after inoculation could not be looked upon as preserved from it; that with those diseased through inoculation the mortality was still very high; and that the "cultivated virus" retained all the intensity and danger of that from the primary source. In 1864, Unterberger considered preservative inoculation an unfortunate measure, but nevertheless necessary in a country destitute of veterinary surgeons. He admitted that he assented to the opinion of Bojanas of Wilna, given in 1820, to the effect that inoculation should not be regarded as a mode of treatment for Cattle-plague, but rather a means of suppressing it—a means less prompt than slaughter, but more efficacious, certainly, than allowing the malady to run its course as an epizoöty, and through its contagious properties: the mortality from inoculation being always less than that from the disease when communicated in a natural manner. He could not in any case give his sanction to preservative inoculation, properly

so-called (*Schutzimpfung*), which was practised every year on the whole of the bovine population, in the same manner as vaccination; and he only counselled necessary inoculation (*Nothimpfung*), which is resorted to when the disease already prevails in a herd. And even this measure, he added, cannot be permitted, even in the Steppes, unless the owner submits his cattle to all the sanitary police measures recommended to be enforced when the disease appears in a spontaneous manner; the contagiousness of the inoculated malady being as great as the natural one.

The dangers that may arise from these preservative inoculations are particularly great, when there are not a sufficient number of veterinary surgeons to carry out the sanitary police measures. The risks of contagion are increased; and even necessary inoculation should only be resorted to when the veterinary surgeon sees that there is no way of saving those animals not yet affected, but contaminated, by resorting to measures of isolation. And then owners should be indemnified for the loss sustained; as they may assert that their cattle have not died from the natural disease, but from the inoculations.

In the pamphlet now published, Unterberger expresses himself as altogether opposed to inoculation, and even hints that it should be interdicted. He states that in the south of Russia inoculations are carried on, rightly or wrongly, without permission and without control on the part of the Government; and he asks if it is not to this practice in this manner that the enormous loss suffered in 1873, in the province of Cherson, was due. On that occasion no fewer than 90,000 head of cattle died from the plague, and their probable value must have been about 1,500,000 to 1,800,000 roubles (£280,000)—an amount which had never been sustained by any province in Russia previous to the introduction of this unhappy practice of inoculation.

He does not think it necessary to mention that there is no disease which develops so volatile and dangerous a virus as the Cattle-plague, the contagium of which, owing to the more numerous and rapid means of communication now existing, may in a short time be carried to places very remote from Russia in Europe. Experimenters do not appear to consider the great injury they may inflict by their inoculations, and how the public fortune and neighbouring countries may suffer in this respect. The Government should, therefore, interdict the inoculations.

From 1869, and particularly in 1872, the Veterinary Committee, which in Russia acts under the direction of the Minister of the Interior, was all but unanimously opposed to the practice of inoculation for Cattle-plague, and declared there was no reason for introducing it as a general measure; even amongst threatened herds, and those which were more or less contaminated, it could scarcely be authorised. Nevertheless, from a deference for the opinion of one member—the only dissentient—the Committee sanctioned the renewal of inoculation experiments at Karlowka in 1872, and decided that these experiments should be made on animals which had been inoculated in previous years, in order to test the question of immunity, as well as on those composing herds more or less contaminated. The results of these experiments are but incompletely known.

XUM

Unterberger thinks that protective inoculation may be entirely interdicted, owing to the progress Russia has made in organizing a veterinary service; and he reminds us that in 1864, the period when he himself admitted the utility of inoculation in certain circumstances, there were only in the whole Russian empire, including Siberia, about one hundred veterinary surgeons, under the control of the Minister of the Interior. These had a variable income of from 114 to 800 roubles (about £19 to £137), and were under the superintendence of the district doctors, who had the management of contagious diseases. But these veterinarians, who had but little influence and were but low in the social scale, could only render a very trifling service in so immense a country. Since 1868, however, all this has been greatly changed, and this change is still progressing. The inefficient tutelage of the doctors is no longer tolerated, and the Minister of the Interior has, as adviser, a special committee, which directs the veterinary service. At each station where the travelling droves of cattle pass on their way to the fairs, there is a veterinary surgeon whose duty it is to ascertain and verify their sanitary condition. The pay of these veterinarions has been increased by 150 to 300 roubles, according to their position; and it is expected that before long a veterinary surgeon will be attached to each circle or district, and another to each important point on the frontier, especially in the regions most exposed to the Cattle-plague. Then the scourge may be submitted to the same sanitary police measures which, applied in the other parts of Europe as much menaced as certain portions of Russia—Hungary, Turkey, Servia and Roumania, for instance—have proved so successful. It is necessary to resort to occision, as it has been so advantageously applied in France, England, Germany, and elsewhere; there is no necessity, however, for slaughtering the whole of an infected herd every time, as isolation practised at the proper period may frequently prove of great utility in this respect. In the Baltic Provinces, and particularly in Livonia, they have in 1869, and again in 1871, combated the Cattle-plague by slaughter and disinfection. The same has been done in Poland and Finland. In the Government of Plotzk there were killed 725 diseased animals in 1873, in order to stifle an outbreak; and in the whole of the province there were 239,584 cattle and 38,146 calves assured.

It is in the application of these measures, which are alone certain, and in a good and competent veterinary service, that Russia must look in the future with regard to her sanitary police; when she has perfected these, then she may enter into commercial relations with the various countries in Europe, as she demanded at the Vienna Congress in 1872. She will never achieve this through inoculation, which Western Europe looks upon with so much suspicion; inoculation is not a real measure of sanitary police, whose object it is to destroy the virus as speedily as possible, or at any rate to render it less dangerous. By inoculation, on the contrary, the virus is multiplied, and the dangers of contagion increased.

Russia has more need than ever to distribute over Western Europe the cattle she produces so abundantly and economically; for in many

countries the supply is no longer equal to the demand. The Baltic Provinces cannot now yield to commerce wheat at the same price as the provinces in the interior; and they therefore are growing less grain, but more forage and cattle, particularly fat stock, which was much in demand in England previous to 1865, before the invasion of Cattle-plague.

Other parts of Russia would follow this example, and furnish good cattle, which the railways could easily carry if the western countries were not so afraid of this malady. This well-founded dread has had a sensible effect on the cattle trade; for while in 1870 Russia exported 110,808 cattle to Europe, in 1873 she only sent 44,969. A better year than 1870 might, however, have been selected, for it is possible—nay, extremely probable—that the exportation was much greater than in other years, in consequence of the war, and the provisioning of the German armies with Russian cattle, which brought the plague with them from Russia, to spread it over nearly the whole of France and Germany.

Abstract of the Proceedings of the Royal College of Veterinary Surgeons, Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

Quarterly Meeting of Council, held April 13th, 1876.

The PRESIDENT, Col. Sir Frederick Fitzwygram, Bart., in the Chair.

Present: — Messrs. Harpley, Field, Withers, Dray, Gowing, Moon, Fleming, Greaves, Broad, Lepper, Cox, Moore, and the Secretary.

THE SECRETARY read notice concerning the meeting.

The minutes of the last meeting were read and confirmed.

THE SECRETARY announced that the following letters had been received:

1. Letters from Dr. Taylor and Dr. Sanderson acknowledging receipt of letters of condolence.

2. Letter from Mr. Byrne, Drogheda, desiring to know whether the Council granted diplomas to the persons holding the Edinburgh qualification on payment of a fee of seven guineas and on some written formula.

He was informed that diplomas were not granted on such terms, and that candidates were required to undergo the usual course of study before being eligible for receiving a diploma.

3. Letter from Mr. Nunn, student at the Royal Veterinary College, wishing to be informed upon what particular subject he had been rejected.

He was informed that he failed in the subjects of Veterinary Medicine and Veterinary Surgery.

MR. HARPLEY thought that such a course as had been adopted by the Secretary was unusual.

THE SECRETARY said that by the bye-laws of the Royal Veterinary College the Professor was bound to give the student such information as had been asked for in the present instance; but as the record had not been supplied to the Professor, he could not give the information. Mr. Nunn's letter was submitted to the Professor, who desired him (Mr. Coates) to answer it: and he did so.

THE PRESIDENT said this was a question of precedence, which he was not in a position to settle; but if the custom really did exist, he thought it was a very undesirable one.

MR. FIELD said he should move "That for the future the Secretary be instructed not to furnish any information to rejected students, with reference to the subjects on which they are examined."

MR. HARPLEY seconded the motion, observing that the President was available for consultation with tthe Secretary on such matters at any time.

MR. GOWING did not say that it rested with the Council to furnish such information to students; but he thought it was desirable that they should have the information, so as to guard against similar mistakes at future examinations.

MR. FLEMING thought that the information would come with better grace from the Professors who were present at the examinations, and who were responsible for the education of the students, and, indirectly, for their rejection. He therefore quite agreed with Mr. Field's motion.

THE PRESIDENT thought the matter rather immaterial, because the students could get the information from the Professors present at the examination; but he did not think the information should be given officially.

MR. FIELD'S motion was ultimately put and carried.

4. Letter from Professor Walley, of the Edinburgh Veterinary College, dated 10th April, asking if he was to understand from the report in last month's *Veterinarian* that it had been definitely determined by the Council to adopt the recommendation of the Educational Committee, in reference to the alteration in the curriculum, and whether all students entering the college after this date would do so under the new regulations.

THE SECRETARY was instructed to reply, in accordance with the 11th Clause of the Report of the Education Committee, which was, "That notice be given to all students entering any veterinary school from and after the date of the adoption of this (or such plan as may be approved by the Council) that they enter subject to such rules and regulations as Council may make regarding the period of study and examination."

5. Letter from Mr. Ward, of Winchester, enclosing an advertisement from the *Daily Telegraph* in reference to the obtaining (confidentially) of a Veterinary Diploma from some source other than the proper one. He enclosed a cheque of five guineas as his subscription towards the College Fund.

6. Letters from Dr. Dunsmure stating that the number of candidates for the minor examination was four from the New Edinburgh College, and four from the Glasgow College. For the pass examination in Edinburgh seventeen, and in Glasgow fifteen, making a total of thirty-two.

7. Letters from the several members of the Court of Examiners, approving the arrangements made for the examinations held in London.

Reports of the Examinations held in London.

THE SECRETARY reported that at meetings of the Court of Examiners held for the Pass Examination on the

3rd	April,	1876,	7	candidates	were passed and	2 rejected.
4th	"	8	"	"	1	"
5th	"	9	"	"	0	"
6th	"	7	"	"	2	"
7th	"	4	"	"	5	"
8th	"	4	"	"	2	"
	Total	39			12	

At a meeting held on the 10th April for the First Examination, 7 passed and 2 were rejected.

" 11th " 2 " 2 "

Making a total of 9 4

THE SECRETARY intimated that a letter had been sent to the Royal Veterinary College, stating that the Council having now received the report of the Education Committee, and having considered it desirable to obtain the opinion of the Governors of the Royal Veterinary College with reference to the new proposals, requested to be informed whether the Governors of the Royal Veterinary College would be willing to appoint a Committee to meet the Education Committee of the Council, and if so, what day and what hour would be most convenient. There was no present emergency in the matter, but the Council wished the scheme completed and ready to lay before this quarterly meeting of the Council.

PROFESSOR SIMONDS replied to the effect that the Committee had under consideration the question of the education of the students, but that it would be necessary to take counsel with the Governing body of the College before fixing a day to receive a deputation from the Council. The letter further stated that the next quarterly meeting of the Governing body was expected to be held on the 21st of April.

A letter was received from Mr. Jenkins, the secretary of the Royal Agricultural Society, stating that a meeting of the Veterinary Committee of the Council would be held on Tuesday, April 4th, when the regulations with regard to the proposed Veterinary Scholarship would be discussed and reported to the Council, who invited the attendance of a representative of the College, and asked a statement to be forwarded of any further supplementary recommendation.

MR. HARPLEY said he had been asked to draw up a report, and that he had communicated with the Secretary of the Royal Agricultural Society upon the subject. He explained to the Council the various clauses of the report.

On the motion of the President, the Report was received and ordered to be forwarded to the Royal Agricultural Society.

Letters were read from Professor McEachran, Principal of the Veterinary College, Montreal, relative to the admission of foreign students, and other matters.

The obituary notice was read.

THE REGISTRAR announced that there were on hand fifty copies of the old Register, and suggested that a number of lists of new members should be printed by way of an addendum.

On the motion of MR. BROAD, seconded by MR. GOWING, it was resolved that 100 copies of an addendum containing a list of the new members be printed.

College Fund.

The report stated that since the last meeting of the Council dividends to the amount of £52 15s. 9d. had been received, and that the subscriptions amounted to £17 12s., making a balance at the bankers' of £171 12s. 4d.

In answer to the PRESIDENT,

THE SECRETARY stated that the amount invested was £1182 15s. 10d., the balance at the bankers' £171 12s. 4d., and promised subscriptions £55 15s., making a total of £1410 3s. 2d.

MR. FLEMING moved "That those gentlemen who have given in their names for a certain sum of money, and who have not paid, be applied to officially for their subscription."

MR. DRAY seconded the motion, which was carried.

Finance Committee.

The report stated that the vouchers and receipts for payments during the preceding quarter had been examined and found correct, and that the present liabilities amounted to £107 18s. 8d., which the Committee recommended should be discharged. The attention of the Committee having been directed to the excessive expenditure in carrying out the examinations, in consequence of the number of rejected candidates, they resolved to employ a professional accountant to report to the Council the annual income and expenditure from April, 1872, to April, 1876.

THE SECRETARY having read the statement referred to,

It was moved by MR. DRAY, seconded by MR. FLEMING, and resolved, "That the accounts be received and adopted."

Mr. BROAD believed that it was the feeling of the Committee that a rejected student should pay a three-guinea fee every time of his rejection. If the Council was too liberal in this respect, it was clear, from the experience of the past year, that they would drift into bankruptcy. He was, therefore, strongly in favour of the suggestion of the Committee.

THE PRESIDENT said that the recommendation of the Committee was that not less than nine students shall be examined on any one night.

After some desultory discussion,

MR. FLEMING said that such a recommendation ought to be dismissed. It was impossible that the Royal College could take such a serious step, because it was obvious that if there was a small number of students—say five—the Council could not refuse to examine them.

The recommendation was ultimately negatived.

MR. WITHERS (the Treasurer) informed the Council that the present liabilities were £103 13s. 5d. in advance of the amount at the bankers'.

MR. FIELD moved "That the Treasurer having represented that there are no funds to meet the present liabilities, the Trustees are desired to take steps to furnish him with money."

MR. BROAD seconded the motion, which was carried.

Cheques were ordered to be drawn for the current expenses.

Auditors.

Mr. South, jun., and Mr. Rowe were appointed auditors.

Annual Report.

The President and Messrs. Fleming and Harpley were appointed as a Committee to draw up the annual report.

Presence of Assistant-Professors at Examinations.

It having been stated in the Examiners' report that Mr. John Steel was present,

THE PRESIDENT said it was a question for the consideration of the Council whether Assistant-Professors were entitled to be present at such examinations. According to the rules, if he was a lecturer in any shape or way, he was entitled to be present.

After some conversation, the Secretary was instructed to ascertain what the bye-laws were on the subject.

The quarterly meeting having terminated,

A Special Meeting was held.

THE PRESIDENT said that the meeting was now made special for the purpose of altering Bye-Law 28. This alteration had been brought forward at a previous meeting, and was now presented for adoption, so as to make it law. It was proposed to add to the Bye-Law, "That no examination shall

take place unless notice shall have been given, as hereinafter mentioned, by not less than nine students, of their intention to present themselves for examination." The reason for this was that in Scotland, once or twice—it had never occurred in London—only three or four candidates had come up for examination. It seemed to him unreasonable that the Board should be called together for less than nine students; but he did not think that if there were eleven, the two should not also be examined. In the new rules which had been drawn up, there was a proviso to the effect "That examinations shall be held at such time as the Council shall direct;" this, he thought, would cover everything, and would save the Council running into the same expense as had been incurred last year.

THE SECRETARY said that, according to the rules of the Charter, the proposed alteration would have to be confirmed at another special meeting.

MR. GREAVES said it had been suggested that in the event of there being seven or eight, there should be power to examine those eight, provided the amount of the fees for nine students should be supplied.

THE PRESIDENT said that that would not be legal under the Charter, because they could not charge more than a certain sum.

MR. GREAVES thought it was quite unreasonable that the Board of Examiners should be called together for such small numbers, and that nine was a very fair and proper number for which to summon the Board of Examiners.

THE PRESIDENT having moved the adoption of the Bye-Law, it was carried.

THE PRESIDENT then gave notice for a future meeting that he intended to move an alteration in Bye-Law 34, which was as follows:—"Students rejected twice at either the first or second examination, shall pay a fee of £3 3s. in addition to the original fee of £7 7s. for each subsequent re-examination, and seven days prior thereto." He should move that the word *twice* be left out, which would have the effect of making the student pay each time. In the new rules which had been drawn up, power was taken to charge rejected students the same as others; but inasmuch as students joined under a certain system at present, it would be harsh to make them pay the whole again. They would be made to pay for the first examination, but not the second. This would add some money to the funds of the College, and prevent some students from again coming up. He also gave notice that he intended to move at the next meeting, that the Veterinary Examiners for the diploma be as far as possible the same both for the London and Scottish Boards. His reasons for making that motion were two. First, it was very desirable to have the same standard of examination in both, and secondly, it was almost impossible to carry out fairly the system of honours which had been agreed to without having the Boards very largely the same. As regards medical men, it would be impossible to get them to proceed to Edinburgh, or come to London in the case of Scotchmen; but as regards the Veterinary Examiners, he thought it possible that this might be done. Two of the Veterinary Examiners happened to be army men, who received annual pay and who obtained leave of absence, and therefore they were not in the same difficulty as persons who had to give up practice. He thought it possible that another—a civilian—might be found to undertake the duty, and also a fourth, a Scotchman, for Scotland: the London men being for London. The standard of Examination would then be kept up, and the honours would be divided more fairly. He merely introduced the subject for consideration.

MR. FLEMING called attention to a motion which he suspended on the 6th of October last, with regard to the erasure of the names of members who had disgraced the profession. He wished to know whether it was now

necessary to give notice of that motion, or whether he should wait until the Supplementary Charter had been obtained, as it would give the power sought to be obtained by his motion. If it was not necessary to bring on the motion, he suggested that it should be removed from the notice board.

THE PRESIDENT said he saw Mr. Loch on the subject, and he suggested that in the Supplementary Charter the Council should take power to eject any person for any offence they thought sufficient; and this power had been taken. It was so in the medical schools, because it was sometimes almost impossible to define an offence. As the Supplementary Charter would be obtained before long, it was scarcely worth while taking action in the matter now.

MR. FLEMING said that in that case he would remove the notice from the notice board.

The Council then adjourned.

PARIS ACADEMY OF MEDICINE.

AT the *séance* of the Paris Academy of Medicine on January 4th, Professor Colin, of the Alfort Veterinary School, read a paper on Glanderous Leucocytosis, with a view of filling up a *hiatus* which exists in the hæmatology of Glanders, and solving the problems (1) whether Leucocytosis is present in Glandero-farcinous affections, and if so what are its characters; and (2) whether this Leucocytosis is initial or secondary in the chain of symptoms, and the part it plays in the anatomical lesions. As to the first of these questions, Colin believes that it may certainly be affirmed that there is a Glanderous Leucocytosis, the point of departure for which is in the lymphatic system. It coincides with the primary manifestations of Glanders, even with its vaguest premonitory symptoms; the blood then containing a larger number of white globules than in health. This alteration in the vital fluid becomes all the more marked, as the lesions in the tissues extend and become more serious; but it is more especially noted in the chronic form, when it is allied with other changes, but particularly Anæmia.

The method resorted to to arrive at these conclusions, and to number the leucocytes, is only applicable to Solipeds, the blood of which coagulates very slowly. Colin allows the blood to subside for several hours in a graduated test-tube, at a temperature nearly at zero. The column of blood, in the case of Solipeds, separates into three layers: a lower one containing the red corpuscles; an upper one almost exclusively composed of plasma; and an intermediate layer, in which are the white corpuscles, globulines, etc., which are heavier than the plasma, but lighter than the red corpuscles. According to the greater or less density of this intermediate layer in relation to the lower layer, the relative proportion of the leucocytes to the red corpuscles may be judged of. In Glanders and Farcy the layer of leucocytes increases rapidly. Parallel modifications are observed in the lymph, especially in that which is obtained from a region where some glanderous lesion exists. In fine, from the commencement in Glanders and Farcy, Leucocytosis, easily ascertained, is always present, associating itself with Anæmia; and its starting-point appears to be the lymphatic system.

With regard to the part Leucocytosis plays in the development of the characteristic lesions of Glanders and Farcy, Colin is of opinion that the leucocytes derange the capillary circulation, giving rise to embolism, and in this way acting on more distant parts, either mechanically, or by producing a special kind of irritation. It is probable that these lymphatic elements, once they are distributed in the circulation, collect to form the nuclei of pneumonia, tubercles, caseous deposits, etc., though it is admitted that these alterations require further investigation.

In the meantime, Colin arrives at the following conclusions in his paper:—1. Leucocytosis exists from the commencement of Glanders and Farcy, but particularly in the chronic form, and in proportion as the disease has made progress. 2. This Leucocytosis may be readily ascertained and measured by means of hæmatometric tests. 3. This condition of the blood and lymph is often associated with Anæmia, especially in Chronic Glanders, when the condition of the lungs opposes serious obstacles to hæmatosis. 4. Glanderous Leucocytosis, whose principal point of departure is in the lymphatic system, appears to take a large share in the production of the characteristic lesions of the disease, and more especially in the lungs.

M. BOULEY pointed out the interesting nature of M. Colin's communication. He was of opinion that the Leucocytosis will facilitate the diagnosis of Glanders in those cases where adequate signs are wanting. Glanders is known by three signs—chancre, discharge, and swelling of the glands—all which must be present to make it certain that there is Glanders. Such, at least, was the opinion of veterinary surgeons until the beginning of this century. When, at a later period, contagion was denied, the ravages of Glanders became enormous. One of the greatest services rendered by Rayer to science, was to establish beyond a doubt the contagious nature of this disease. It is perhaps allowable now-a-days to hope that the numeration of white corpuscles will facilitate the diagnosis in doubtful cases, which indeed are very frequent. In regiments, for instance, it happens that a horse attacked by a glanderous swelling, without any other apparent sign of the disease, is submitted to the application of resolvents; and when the swelling is dissolved, it goes back to the ranks, where it propagates the Glanders with which it is affected. If the enumeration of the leucocytes were capable of giving information in these cases, it would be a real advance. M. Bouley had had numerations made by M. Malassez on this subject, which proved, in uniformity with M. Colin's results, the existence of Leucocythæmia in glandered horses.

M. GUBLER expressed a fear that the bearing of a phenomenon which is very frequent and almost common-place in many chronic diseases, as in multiple suppurations, cachexias, etc., should be exaggerated. In fact, Leucocytosis is too common to be erected into an element of diagnosis.

M. CHAUFFARD shared this opinion: Leucocytosis is present in all suppurations, in Small-pox, in purulent infection, and nearly all traumatisms, as well as in Scarlatina, Measles, Puerperal Fever, etc.

M. VERNEUIL denied the constant presence of Leucocytosis in the wounded, as well as the hæmatic origin of pus, which, in his opinion, is far from being demonstrated.

M. REYNAL regretted that in M. Colin's experiments one important element had been neglected; that is, alimentation. It is well known that badly nourished animals have a large amount of leucocytes in their blood.

January 25.

M. COLIN, continuing his description of his investigations on the blood in Glanders, began by endeavouring to determine what should be understood by the term virulence. He contested M. Chauveau's investigations into the virus of Vaccine and Glanders, and condemned the diffusion method, by which two liquids of different density were superposed in the hope that one would by diffusion yield a portion of its principles to the other. Vaccine, an albuminous liquid, could scarcely yield anything to the water above it. The method of washing, applied to Glanders, was scarcely more conclusive; the first waters of the washing transmitted the disease; the last were innocuous, because they only contained changed elements. M. Colin was of opinion that the virulence of animal liquids is independent

of their former elements—leucocytes, globulines, red corpuscles, epithelial cells, and of all kinds whatsoever of nuclei or granules. It belongs to the liquid in mass, to the whole substances. To this conclusion he was led by his researches on Anthrax, Septikæmia, Vaccine, and Glanders Returning to Leucocytosis, M. Colin treated successively the following questions :—Are there several forms of Leucocytosis? What is the starting point of these conditions? Is Glanderous Leucocytosis a special Leucocytosis? He protested against the supremacy of micrographic theories in the domain of pathological facts. Since histologists have pointed out elements analogous to those of the lymphatic glands in the spleen, thymus, intestinal walls, etc., splenic, intestinal, and other forms of Leucocythæmia have been created. And yet the physiological function of the spleen is unknown. In the majority of cases of Leucocythæmia the spleen is swollen: but is that an effect or a cause? It is not very probable that it should be a cause, for (1) the the veins of the liver do not contain any more white corpuscles than the other branches of the portal vein; (2) the lymphatics springing from the spleen are not richer in leucocytes than the rest of the system; (3) extirpation of the spleen does not change the proportion between the red and white corpuscles. Besides this, the obstruction of an organ, far from augmenting, diminishes the secretion of them—as in the kidney, liver, etc. As to the glandular system of the intestine, it would result from M. Colin's experiments that they were secreting and not lymphatic organs; besides which, their number would not allow the production of Leucocytosis. He equally denied the Leucocytosis arising from a process effected by the marrow of the bones; the modifications undergone by the bony marrow in emaciated animals constituted a general fact in connection with marasmus, which had nothing to do with Leucocytosis. It was with other and better materials that the history of Leucocytosis must be constructed.

February 1.

M. COLIN continued the reading of his memoir, and sought to establish that all the leukæmic conditions were of lymphatic origin, were of the same nature, and resulted from the temporary or prolonged preponderance of the formation over the destruction of leucocytes; that the symptoms of these leukæmic conditions resulted from disturbances produced in the circulation, hæmatosis, and nutrition, by leucocytes in excess; that in virulent diseases, leucocytes were rather effects than a cause of the virulence; finally, that in contagious diseases they had no specific character. In support of these propositions he cited experiments. He had produced fistulæ of the thoracic duct in cows and bulls, and had collected in twenty-four hours from 15 to 95 kilogrammes of lymph; this enormous mass, rich in leucocytes, would suffice amply to bring on a Leucocytosis, if leucocytes thus thrown into the blood were stable and not transitory elements. In opposition to the opinion of the Germans, leucocytes were found in the last lymphatic networks when the lymph had not passed through any lymphatic gland. Leucocytes were essentially unstable mobile elements, undergoing rapid modifications. While leucocytes were very active, emitting numerous prolongations in lymph, they were less so in blood, and these characters were still less in other media. In conclusion, M. Colin decided on the lymphatic origin of all the leukæmic conditions. All leucocytoses developed themselves rapidly on account of the great mass of lymph elaborated and poured into the blood by the lymphatic organs. They did not necessarily require hypertrophy of the lymphatic glands. There was nothing to prove the splenic, intestinal, etc., origin of certain leucocytoses. Between the physiological and pathological leucocytoses there was no difference of kind, but simply of degree or duration. The leucocytoses of the poison-diseases had no special characteristic; the poison

was the cause, but did not give any special distinction. Leucocytoses were anæmic conditions, and resulted from a want of equilibrium between the production and the destruction of leucocytes. Obstructions of the spleen and liver by embolisms of the white corpuscles, indicated the deposition of an excess of leucocytes in the organs, rather than an increased formation of these elements in the points where they accumulated.

February 22.

M. CHAUVEAU forwarded a letter in answer to M. Colin's criticism on his experiments on virulent liquids. He maintained that whether the poisons were gradually and progressively diluted in an inert liquid, or the soluble parts of the solid particles were isolated, the same result was always obtained; the virulence was independent of the dissolved substances, and was related to the presence of suspended particles. The diffusion of albuminous liquids was effected when no membrane separated them. M. Chauveau had always seen that a layer of water of from 4 to 5 millimetres, placed in contact with vaccine lymph, speedily became albuminous, so as to coagulate by heat and nitric acid. Vaccine matter behaved like spermatic fluid submitted to gradual dilutions; neither the virulent property in the one, nor the fecundating property in the other, was impaired nor attenuated by dissolution, but simply dispersed here and there in the liquid mass. The corpuscular elements of glanderous pus, abundantly and repeatedly washed during forty hours, and thus freed from any serosity which might serve as a vehicle, were as virulent as the entire pus. In the corpuscular elements, therefore, lay the activity of the virus. The meaning attached by M. Chauveau to his experiments did not go beyond this; he did not pretend to affirm anything in the essential nature of the virus. In conclusion, he claimed the priority of the discovery of Leucocytosis in Glanders for MM. Christot and Kiener.

M. COLIN recalled to mind that Glanderous Leucocytosis was pointed out by Delafond twenty years ago. As to M. Chauveau's diffusive experiments, they proved nothing; for he operated in capillary tubes, in which capillarity necessarily intervened, and not diffusion alone. M. Colin operated with large tubes, and had never under these conditions been able to ascertain the diffusion of albuminous liquids; he had employed in his experiments vaccine lymph, collected in sufficient quantity from numerous inoculations performed on bulls. As to washing, if the virulence belonged to the corpuscles, all the washing waters, as far as the tenth and upwards, ought, according to M. Colin, to be virulent; since, according to him, they brought away a notable quantity of corpuscles.

OBSTETRICAL SOCIETY OF LONDON.

AT the meeting of this Society, on March 8, MR. JONATHAN HUTCHINSON read a "Report on certain Causes of Death in Ewes during and after Parturition, with Notes on the Navel-ill in Lambs." This was a long and interesting communication, in which the author recounted his experience during the last three seasons. The results seemed to prove that the death of the fœtus before delivery was of far more serious consequence in sheep than in the human subject, and also that it was far from an infrequent one; the lamb after death appearing to become a cause of Metritis, and there being little tendency to its expulsion. When Metritis occurred, it was apt to run a rapid course, Gangrene often ensuing, during which rupture of the walls often took place. Peritonitis and Pyæmia not infrequently occurred in connection with Metritis. Puerperal Metritis and Peritonitis, or the consequent Pyæmia, seemed to be invariably accidental, so to speak, and not the result of contagion. They occurred in animals treated in the

open air, and yet ran a course almost precisely similar to the parallel maladies in the human subject. Ewes, during lactation, seemed liable, by the use of an improper article of food—*e.g.*, cotton cake—to a sort of idiopathic Tetanus, which the same article of food showed no tendency to produce in lambs, hoggets, and undelivered ewes. Lastly, young lambs were liable, quite independently of any known source of contamination, to the occurrence of purulent Phlebitis of the umbilical vein, with the consequent phenomena of Pyæmia; a fact which gave strong support to what Mr. Hutchinson believed to be the true hypothesis of all Pyæmia strictly so called.

Dr. Cooper Rose referred to the salutary effects of opium in subduing pain and spasm in sheep. Many ewes died *after* lambing from what was called "straining." This he believed to be analogous to "after-pains," which, if neglected, led to Metritis, exhaustion, and death of the sheep. In 1853 he advised a friend, who had lost several sheep with this symptom, to try two-drachm doses of laudanum in warm gruel every two hours. This had the effect of entirely curing the disease, all the sheep which were subsequently attacked, with one exception, being saved. In order to eliminate all sources of infection, he would like to know whether the land had been manured by sewage or artificial manures.

Dr. Playfair said it would be difficult to over-estimate the value of such a paper. It would be well if others were to follow Mr. Hutchinson's example. His conclusion as to contagion having nothing to do with the disease seemed hardly justified *primâ facie*, and it would be interesting to know if Mr. Hutchinson had really eliminated the possibility of the disease having been conveyed to the affected ewes. There were many points that forcibly reminded him of the epidemics of Puerperal Fever occasionally occurring in limited localities, or in the practice of one man. In Mr. Hutchinson's series, the first case of all was clearly a case of Autogenetic Septikæmia, a piece of placenta being found *in utero* after death. Was it not possible that the epidemic was started by this case, and conveyed to the other ewes by the shepherd, or in some other way?

Dr. Snow Beck, in further illustration of the subject, had brought forward specimens of uteri removed from sheep which had died after lambing. These he had carefully examined under water. They were large, flabby, and uncontracted; but otherwise all the tissues were perfectly healthy. He had failed to detect any appearance of inflammation, nor were there any coagula in the veins. On laying open the uterus, the inner surface was seen to be covered by a copious, dirty, reddish-yellow, purulent-looking fluid, which when washed away left the surface flocculent and shaggy, as is usual. Some of the veins were found to be filled with a fluid similar to that seen on the internal surface of the uterus, but the coats of the veins were healthy. On injecting air into these veins it traversed the sinuses in the walls of the organs, and escaped, by openings previously concealed, at the points where the cotyledons of the placenta had been situated; leading to the conclusion that the fluid from the interior of the uterus had been taken up by these veins, owing to the flabby, uncontracting condition of the uterine walls, and conveyed into the general circulation in the same manner as in the human female after a miscarriage or parturition. The further changes generally found in the human subject were not observed in the ewe, owing to the animal being killed at an early stage of the affection.

Dr. Wiltshire thought that there might perhaps be something poisonous in the pastures in which the ewes were grazing, and was struck with the suggestion that Mr. Hutchinson attributed the mortality among his lambing ewes to the use of cotton-cake. In America, and especially among negresses, cotton-root is used as an abortefacient. The symptoms were markedly

tetanic. Was there any elevation of temperature? Was the saliva of the mother poisonous through nibbling the umbilicus of the lamb in the disease called "navel-ill," as it is in Hydrophobia?

DR. AVELING thought Mr. Hutchinson's paper very valuable. He would remind the fellows that Harvey, the father of British obstetrics, gained a great deal of his obstetric knowledge from the numerous and accurate observations he made upon generation and parturition in the deer. He thought our knowledge might be extended by studying the parturient processes, puerperal disorders, and diseases of the female generative organs in animals.

DR. GRAILY HEWITT said that when attached to the British Lying-in Hospital, he had noticed a condition analogous to that spoken of by Mr. Hutchinson as "navel-ill." He remembered reading a tract published some years since, in which the connection between morbid processes at the navel and Icterus of new-born children, with distinct affection of the liver, had been noted.

MR. HUTCHINSON inquired whether the patients generally recovered when Jaundice was marked, or whether they ended fatally with symptoms of Pyæmia.

The PRESIDENT (Dr. Priestley) inquired whether the young lambs suffering from "navel-ill" belonged to the ewes affected with Tetanus, and whether the lambs themselves showed any symptoms of Tetanus. Drs. Osborne and Bland had contributed valuable information to the subject of the diseases and complaints of the lower animals from parturition.

DR. EDIS thought that in the first year's experience recorded by Mr. Hutchinson, the suggestion offered itself that the high ratio of difficult labours may have been incidental to the breed; the attempt to obtain large animals by crossing the breed was, in all probability, the true explanation of the mortality. This was a well-recognised fact among sheep-farmers, who were always careful to avoid placing rams of a larger breed with ewes than experience warranted, for this very reason. As to "the death of the fœtus before delivery being a far more serious occurrence in sheep than in the human subject," this might be explained by the greater apathy among shepherds, owing to their attention being divided among so many, than is the case with medical men; who, in addition to special knowledge, individualise their cases, and, where death of the fœtus occurs before labour, induce delivery at once before any ill-results from decomposition and putrid infection have had time to take place; but where this has been neglected, Septikæmia is by no means infrequent. A case occurring in a dog, illustrating these views, was given.

DR. BRAXTON HICKS stated that in an epidemic of Puerperal Fever in Paris, the children were affected by Peritonitis. It would be interesting to know how far this was in connection with Pyæmic origin. There was unquestionably some relation between Septikæmia and this condition.

MR. HUTCHINSON, in reply, asked whether, in the epidemics mentioned by Dr. Hicks, any distinct deposits were found in the liver from inflammation of the navel. He was surprised to hear children suffered so. In all his lambs which died of the "navel-ill," pyæmic deposits were invariably found in the liver. The lambs affected were not solely from sheep suffering from Tetanus. There was no association between the two, as far as he had observed. The Tetanus in the ewes was due to the food taken. In one lamb the navel was long, and had not been nibbled by the ewe. Many of the lambs had not been touched by the shepherd. Dr. Playfair had suggested that the cases were possibly those of Peritonitis, Pyæmia, and Metritis, analogous to Puerperal Fever in the human subject; that the first case was autogenetic, and the others from contagion. The details given showed that any supposition of that sort was out of the question, the dates showing that the cases

occurred at considerable intervals from each other. In several it seemed due to the retention of a dead lamb before delivery. It was puzzling to explain how one year there were many deaths and another none. He had no reason to believe the inflammations of the uterus had any relation with each other. They seemed to arise of themselves, and from independent sources. As regards Tetanus, he had not seen any case among the lambs; and as to the influence of food he thought this had little to do with it, as last winter the ewes were fed on cotton-cake, but there were no cases of inflammation. The disproportion in the size of the lambs to the maternal passages he considered a very important one.

DR. COOPER ROSE wished to ask one question—namely, whether the land was manured by artificial manure; to which MR. HUTCHINSON replied that the ewes were fed on turnips, and not on grass.

DR. WILTSHIRE inquired whether there were any yew trees about; to which MR. HUTCHINSON replied in the negative.

ROYAL AGRICULTURAL SOCIETY.

AT the meeting of this Society, held on April 5, the Hon. W. Egerton, M.P., Chairman of the Veterinary Committee, reported that the Committee had discussed several proposals in reference to the suggested veterinary scholarship, a scheme for which they expected to submit to the Council at the next monthly meeting. The directors of the Highland Society had declined to join in any such scheme, as they would have no voice in the appointment of examiners. Dr. Burdon-Sanderson had already received at the Brown Institution two of the test animals which had been purchased for the purposes of experiments in reference to Pleuro-pneumonia and Foot-and-mouth disease, and the remaining six were shortly expected to arrive from Northumberland.

NEW YORK VETERINARY SOCIETY.

THE following officers have been elected for the ensuing year:—A. Lockhart, M.R.C.V.S., President; J. L. Robertson, M.D., V.S., Vice-President; J. D. Hopkins, V.S., Treasurer; and L. T. Bell, V.S., Secretary.

UNITED STATES VETERINARY MEDICAL SOCIETY.

THE twenty-sixth semi-annual meeting of this Society was held at Young's Hotel, Boston, Massachusetts, on Tuesday, the 21st of March, the President, Professor Liautard, of the American Veterinary College, New York, in the chair. The following members were also present:—

James D. Hopkins, New York.
Alexander Lockhart, New York.
William Saunders, Boston.
Theo. S. Very, Boston.
James Penniman, Worcester.
John B. Cosgrove, Worcester.
O. H. Flagg, New Bedford.
Robert Wood, Lowell.
E. T. Thayer, Newton.
C. P. Lyman, Springfield.

The minutes of the previous meeting were read and approved. The names of several gentlemen were proposed for membership. A copy of the new certificate of membership was presented by the secretary to the mem-

bers present for their opinion; the same was approved and ordered to be used. The President suggested that it might be well if the Society could arrange to have some accommodation at Philadelphia during the coming Exhibition, which might be used as a headquarters for members of the profession visiting the place. A committee was appointed to investigate the matter, and report the result to the Society at a special meeting to be called at an early date. A paper was read by Dr. Thayer, State Commissioner, upon the history of Pleuro-Pneumonia, Epizoötic Aphtha, and Splenic or "Texas Fever," amongst cattle in that country. The Doctor also offered some remarks upon the modes in use for the prevention of the spread of these diseases. An interesting discussion of the subjects followed, after which the meeting was adjourned.

CHARLES P. LYMAN,
Corresponding Secretary.

ROYAL COLLEGE OF VETERINARY SURGEONS EXAMINATIONS.

AT the several meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, held during the week commencing April 3rd, the following students from the Royal Veterinary College, London, were admitted members of the profession :—

Mr. Samuel James Cooper, the Barracks, Aberdeen.
" Albert Richard Charles, London.
" George Whitworth, Grantham.
" George Goodacre, Keyham, Leicestershire.
" Arthur Henry Jacobs, London.
" William Rose, Stratford-upon-Avon, Warwickshire.
" Fred Smith, Herbert Road, Plumstead, Kent.
" John Sylvester Cusack, Mount Judkin, Cashel, Ireland.
" William Dale, Spetchley, Worcester.
" James Mosedale, Dukinfield, Manchester.
" Thomas James Marriott, Carcolston, Notts.
" William Coupe, Hardwicke Sandonstone, Stafford.
" Charles Hartley Thomas, Low Crompton, Oldham.
" Wright Graves, Cottenham, Cambs.
" Herbert Darley, Sheffield.
" Alfred Brookes, Whitefield, Manchester.
" Francis Waters Phelan, Lisfuncheon Clogheen, Cahir.
" John Henry Bryars, West Butterwick, Bawtry.
" Albert Wheatley, Reading, Berks.
" George Amos Banham, Cambridge.
" William Awde, Winston, Darlington, Durham.
" Henry Goulè, Malvern, Worcester.
" Thomas Sager Faulkner, Rochdale, Lancashire.
" Thomas Robert Prime, Upper Norwood, Surrey.
" Frederick George Reynolds, Chatteris, Cambs.
" William Francis Peacock, Easingwold, Yorks.
" Myrus Child Yaxley, Norwich.
" John Cooper, Ash, Sandwich, Kent.
" James Moore, Avenue de Villiers, Paris.
" John Fawthrop Fyrth, Bradford.
" Alexander Braik Daniel, Old Meldrum, Aberdeenshire.
" Joseph Henry Irish, Westbourne, Sussex.
" Philip Webster Powell, Over, Gloucestershire.
" Montague Miles Rock, Chelsfield, Kent.

„ Henry Jennings, Charing, Kent.
„ William Henry Hughes, Swansea, South Wales.
„ Hamilton James Kelly, Cavalry Barracks, Aldershot.
„ William Wilkinson Smart, Coventry.
„ Henry Beard, Macclesfield.

In accordance with the resolution of the Council of the Royal College of Veterinary Surgeons, the Court of Examiners reported the following students from the Royal Veterinary College as having passed their examinations with VERY GREAT CREDIT, viz., Messrs. Robert Prime and Myrus Child Yaxley. Those who passed with GREAT CREDIT were Messrs. William Rose, Fred Smith, William Dale, John Cooper, and Alexander Braik Daniel.

The following students of the Royal Veterinary College also passed their "First Examination" at a meeting of the Court of Examiners, held April 10th and 11th :—

Mr. Francis Kennedy.
„ William Ridgman.
„ Henry Paul Chase.
„ Thomas Avis.
Mr. Charles Edward Smith.
„ Richard Head Ringe.
„ Samuel William Slattery.
„ Arthur Hodsoll Brooks.
Mr. John Atkinson.

Parliamentary Intelligence.

HOUSE OF COMMONS, MARCH 27TH.

Army Veterinary Surgeons.

Mr. STACPOOLE asked when the Secretary of State for War would be prepared to state his intentions with reference to an assimilation of the offices of Principal Veterinary Surgeon and the head of the Medical Department, as regards period of service and retirement, and whether he contemplated any other step whereby both the pay of Army Veterinary Surgeons may be increased and the path to promotion opened up to them.

Mr. HARDY stated in reply that the subject of assimilating the offices of the head of the Army Medical Department and the Principal Veterinary Surgeon was under the consideration of the Government. There were however, very great difficulties in the way. In consequence of the enormous amount of work the Government actuaries had in hand, he could not fix a time for dealing with the question, but he was anxious that the Army Veterinary Department should be put in a more satisfactory state than it now is, and especially as regarded the term for which the Principal Veterinary Surgeon should hold his appointment.

Jurisprudence.

HORSE POISONING.

THE *Newark Advertiser* reports the existence in some agricultural districts of a system of horse-poisoning which, unless promptly checked, may become a matter of very serious concern. It appears that a notion prevails among farm servants that the administration of a mixture of arsenic, copperas, and vitriol will be effective in brightening the horses' skins, and give to them a glossy and attractive appearance. Prompted by a desire to make the animals under their charge unnaturally "smart," the men give the deadly

mixture in small doses; and several instances have recently occurred in the neighbourhood of Newark, in which the poison has been given with fatal effect. A few weeks ago Mr. Quibell, of Stapleford, lost two horses worth £150, through arsenic having been given to them; and more recently a still worse case has been brought to light. Mr. Charles Hunt, a farmer at Besthorpe, had five valuable cart-horses that were attended to by a servant named Keyworth. The other day they were taken seriously ill, and on one of them dying it was deemed advisable to have a *post-mortem* examination. The veterinary surgeon, Mr. Proctor, found the interior of the body in a dreadful state. The liver was rotten, the kidneys decomposed, the lining membrane of the stomach eaten away, and the heart flabby. Traces of poison were distinctly apparent; and when Keyworth came to be questioned, he admitted that for two months he had been giving the horses a powder composed of arsenic and copper as prepared for him by a companion named Cook, who is employed by a miller living in the same village. The powder had been given to improve the horses' coats, and as much as would lie on a halfpenny had been given twice a week. The magistrates, before whom the case was investigated, expressed their sympathy with Mr. Hunt, directed Keyworth to pay £20, and sent Cook, whom they regarded as the instigator of the offence, to gaol for three months. Since the case was heard, three more horses have died, and the remaining one is not expected to recover. The loss will not be less than £300, apart from the fact that Mr. Hunt has been deprived of every animal in his possession at a time when they were most needed for the cultivation of his farm. The *Advertiser* hopes that the case will prove a salutary warning, and that if full publicity is given to it, it will nip in the bud a practice which can never be adopted without risking the lives of horses, inflicting serious losses on masters, and rendering misguided servants liable to long terms of imprisonment.*

QUESTIONABLE VERDICT.

GLOUCESTERSHIRE SPRING ASSIZES.—NISI PRIUS COURT.

(Before Mr. Baron Amphlett.)

PROUT v. PARADISE.

THIS was an action brought by plaintiff, who is a farmer at Frocester, against defendant, a veterinary surgeon at Dursley, to recover damages for alleged negligence in the treatment of a mare. Mr. J. O. Griffits, Q.C., and Mr. Jelf, instructed by Messrs. Mullings, Ellett, and Co., were for the plaintiff; Mr. Powell, Q.C., and Mr. Anstey, instructed by Messrs. Taynton and Son, were for the defendant. Damages were laid at £80.

Mr. Jelf having opened the pleadings, Mr. Griffits hinted that ladies should leave the court. This having been done, Mr. Griffits detailed the circumstances to be found in the evidence for the plaintiff, contending that the defendant had been guilty of negligence whereby the mare and foal lost their lives.

Mr. James Prout, examined by Mr. Jelf, said in May, 1873, he bought the mare from Mr. Harvey, of Churcham. She was then in foal, and foaled in due course without difficulty. She was served again, and then having been overworked, she slipped her colt. On August 13th, 1874, she was served again, and after that he took care to work her gently. She was due to foal on July 13th, 1875. She was kept in a straw yard and in a meadow. On the 30th June James Gwatkins, the carter, called witness's attention to the

* This practice of drugging horses by farm labourers and other ignorant people has long prevailed; and it was chiefly with a view to suppress it that Sir J. Astley's Bill was brought forward in the House of Commons.

mare. She was then in the yard. She seemed uneasy, and witness thought she had the gripes, or was going to foal. He sent for Mr. Thomas White, a farrier, but he was not at home. He then went for Mr. Paradise, but Mr. Paradise not being at home, he left word that he should be sent on if he came home shortly. On witness's return, he found the mare apparently quite easy, and eating a bran mash. Mr. White's uncle (a farrier) was there, and he advised that nothing should be done to her. They dined together, and then witness and White went out again to look at the mare. She was then standing up pretty easy. While they were looking at her Mr. Paradise came up—about two o'clock. He gave it as his opinion that the colt was alive. He (Mr. Paradise) then took his coat off, turned up his shirt-sleeves, and examined the mare internally. He said that there was no room, and that she would not foal for days. They then went into the house and had some refreshment, and in about half an hour Mr. Paradise went out with them to go away. In passing through the yard the mare seemed uneasy, and witness said he would give her some Day and Hewitt's mixture, only he had none. Defendant said he had something better, and thereupon he pulled two bottles out of his pocket, and prepared a mixture with some water, and gave it to the mare. He then said, "Now let's leave her for a bit," and they returned indoors. When they went out next, about half an hour afterwards, they found the mare in great uneasiness. Defendant put his hand under the mare's flank and said the colt was dead. He then examined the mare internally. In doing so he burst the mare's bag, and there was a discharge of water. He got a rope and put it round the foal's leg, and pulled with it. Then he got an iron hook, and then a plough trace; and so piece by piece the foal was pulled away. As many as fourteen of them pulled at the same time. Defendant used a knife in his operations. This process was continued from about half-past four till nearly nine o'clock. Plaintiff was unable to look at it any longer, and he went away shortly before nine. Next morning he saw the carcase of the foal, and it was properly shaped. The mare was then almost dead, and witness had her destroyed.

Cross-examined by Mr. Powell: I was among the persons who pulled. So was Mr. White (the farrier), my carter, and some of my men. Defendant stayed all the evening, although he said he was wanted elsewhere. Not a word was said that night about the mare being improperly treated.

Plaintiff's evidence was corroborated by Gwatkins, the carter; Kent, the cowman; Vaughan, a gamekeeper for Mr. Graham Clarke; and Mr. William Cave, farmer, of Nymphsfield, and the father of the plaintiff.

Professor Pritchard, of the Royal Veterinary College, London, gave evidence as to the indications of labour and the treatment which ought to adopted. In his opinion no force should be used until the mare had endeavoured to the utmost to relieve herself—and not then unless the foal were in such a position as not likely to be delivered. The treatment described by the plaintiff was not proper treatment. In cross-examination witness said veterinary surgeons, like lawyers, differed in opinion, and an error of judgment did not necessarily imply any want of skill. The present case was apparently one of "hind-leg presentation"; he had not seen such a case during the sixteen years he had been at the College. Defendant had been a pupil at the College while he (witness) was there.

Dr. J. A. Mcbride, M.R.C.V.S., and lately a professor at Cirencester Agricultural College, corroborated the evidence of last witness. From the evidence of plaintiff it seemed to him that the mare was simply suffering from colic, and therefore her treatment was altogether wrong.

Mr. John Blunsom, M.R.C.V.S., in practice at Cirencester, gave similar evidence.

This concluded the plaintiff's case.

Mr. Powell, in opening the defence, characterised the action as one of those cruel cases in which the reputation of an eminent professional man was put in peril without any ground for it whatever. He contended that all the defendant's treatment was necessitated by the circumstances of the case, and would be pronounced proper and skilful by a number of eminent authorities on the subject.

Mrs. Thurston, defendant's housekeeper, said that on the 30th June, plaintiff came for Mr. Paradise, saying he had a mare which would not foal, and unless Mr. Paradise came at once it would be all over with her. That was at eleven o'clock, and Mr. Paradise started directly he came home, which was about two o'clock.

Mr. Henry Paradise, M.R.C.V.S., the defendant, said he had been in practice at Dursley since 1862, and attended the horses and cattle at Earl Ducie's, Lord Fitzhardinge's, and elsewhere. He started for plaintiff's directly he received plaintiff's message, and took with him his instruments. He arrived at plaintiff's about a quarter to three, and was told that the carter had been sitting up all night expecting the mare to foal. After external observations he said, "I think this colt must be in a wrong position." He made an internal examination, and then told plaintiff they would leave the mare for the present to take her chance. He said the colt might be alive. They then went in to tea. After they had been there about fifteen minutes, plaintiff looked out of the window and said the mare had got down. They went out to her, and defendant administered to her a soothing draught. She became worse, and defendant observed symptoms which convinced him that the mare was foaling. He found that it was a most peculiar presentation, and that the foal was dead. The course which he adopted to pull the foal away was the only one possible under the circumstances. The process occupied between two and three hours—not an unusual time. He left about ten o'clock, and plaintiff promised to let him know in the morning how the mare was.—Defendant was cross-examined at great length by Mr. Griffits, but adhered to his statement.

Mr. T. D. Broad, M.R.C.V.S., of Bath, said he had had a statement of the case submitted to him by the plaintiff's solicitors, but they had not called him as a witness. He had heard defendant's evidence, and considered that he had conducted the operation in a proper and reasonable manner, and had not shown any want of skill. Witness did not see how, under the circumstances, defendant could have done differently from what he did. The presentation was one of extraordinary occurrence and extraordinary difficulty. The force used was quite justifiable. Witness himself generally used a small iron pulley-block for the purpose.

Mr. Nathaniel Lee, M.R.C.V.S., of Bristol, said he had discovered in the case no evidence of want of care, skill, or caution. No practical man could have done more.

Mr. H. W. Hooper, M.R.C.V.S., of Cheltenham, and Mr. John Vick, M.R.C.V.S., of Gloucester, gave similar evidence. Mr. Vick instanced a case of a similar nature which had occurred in his experience only the previous evening.

All these veterinary witnesses admitted, on cross-examination by Mr. Griffits, that they gave their opinion on the assumption that the defendant's statement that the mare was in labour was correct.

This concluded the defendant's case.

Owing to the advanced hour of the evening, counsel on both sides refrained from making speeches, and the learned judge summed up. His lordship pointed out to the jury that they were not called upon to decide between two sets of opinions on veterinary treatment; but if they were satisfied that the course pursued by defendant was one which other practitioners of ex-

perience and judgment considered right, and if he had pursued that course with reasonable care, the defendant would be entitled to a verdict. His lordship then reviewed the evidence, asking the attention of the jury particularly to these two points—Did the defendant take reasonable care to ascertain that the mare was in labour? and, if so, did he adopt a course of treatment which veterinary authorities considered justifiable?

The jury retired to consider their verdict about half-past six, and returned after an absence of about fifteen minutes with a verdict for the plaintiff—damages £70.

Army Veterinary Department.

Gazette, April 14th.

YEOMANRY CAVALRY, BUCKINGHAMSHIRE.—H. G. Lepper, Gent., to be Veterinary Surg.

Gazette, April 18th.

6th Regiment of Dragoon Guards.—Veterinary. Surg. of the First Class R. Poyser, from the Royal Artillery, to be Veterinary Surg., vice J. A. Rostron, transferred to the 5th Lancers.

5th Lancers.—Veterinary Surg. J. A. Rostron, from the 6th Dragoon Guards, to be Veterinary Surg., vice W. B. Edmonds, deceased.

Veterinary Surg. M. Anderson has been posted to 9th Brigade, R.A., and proceeds to Bellary, India.

Veterinary Surg. A. C. Webb has been posted to A Battery, 4th Brigade, R.A., and does duty at Kirkee.

Veterinary Surg. A. Bostock proceeds to Nusseerabad to do duty with G Battery, 4th Brigade, R.A., at that station.

Veterinary Surg. W. H. Kemp, R.H.A., has been granted leave of absence from India to England, in order to appear before a medical board.

Veterinary Surg. J. E. Elphic, 8th Brigade, R.A., has been told off for duty at Rawul Pindee on moving from Lucknow.

Veterinary Surg. B. L. Glover, 19th Brigade, R.A., has been transferred from Meerut to Fyzabad for duty.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

Gazette, March 28th.

The Privy Council have appointed the following gentlemen to be inspectors for the purposes of the above-mentioned Act:—John William Lottie Moore, M.R.C.V.S., John Thomas McHugh, M.R.C.V.S., Professor Thomas Walley, M.R.C.V.S. James Collier Soulsby, M.R.C.V.S., has ceased to be an Inspector of the Privy Council for the purposes of the above-mentioned Act.

The Privy Council have appointed the following gentlemen to be Travelling Inspectors for the purposes of the above-mentioned Act:—Mr. Reginald Courtenay, Mr. A. W. Ricketts, Captain J. T. Tennant, Mr. H. A. Sleeman, Major General J. Daubenay, C.B.

Obituary.

The death is notified of Mr. George Wyse, M.R.C.V.S., East Kilbride, Lanarkshire. He graduated December 23, 1873. The decease is also announced of Mr. C. Houlden, M.R.C.V.S., who obtained his diploma April 25, 1865; and Mr. J. Ford, M.R.C.V.S., of Bishop Auckland, Durham, who graduated in 1870.

XUM

Correspondence, etc.

"DISTEMPER" OF THE DOG AND HUMAN TYPHOID FEVER.

To the Editor of the VETERINARY JOURNAL.

SIR,—Would you kindly find space for the following note from the *Lancet*, which forms an important link in the chain of evidence connected with the recent alleged production of Typhoid in man, through the medium of the evacuation of a dog affected by the malady called "Distemper"?

Yours truly,

T. PATON, M.R.C.V.S.

Army Service Corps.

TYPHOID FEVER IN MAN AND DISTEMPER IN THE DOG.

To the Editor of the LANCET.

SIR,—In the March number of the *Veterinary Journal* I observe Mr. Paton's remarks on this subject, and his reference to a case recorded recently in the *Lancet* by "H. H." I have not had the advantage of reading the communication of "H. H." to you, and therefore I am unable to judge whether his case and mine are the same or not; but the main facts are so nearly alike as to incline me to think that the dog in question was my patient.

The essential facts of my case are as follows:—On the 9th September, 1875, Mr. B., of Hendon, sent for me to see his dog, which I found to be suffering from distemper, complicated with congestion of the liver, and a thin bloody fœtid discharge from the bowels. Some opening medicine was given in opposition to my views. After a week's illness the dog died, and on opening it I found invagination of the bowels for about four inches, with inflammation of the contiguous parts. I did not observe any of the enteric *post-mortem* lesions which are known to me as occurring in human typhoid. Mr. B.'s coachman, who complained to me of the intolerable stench from the dog, fell ill of Typhoid and died of it; and a stable lad was also attacked about the same time. Mr. H., the medical attendant, told me that he attributed the illness to the dog—a view which I ventured to think was hastily formed. On several occasions I called Mrs. B.'s attention to the defective state of the drains at the kitchen door. I also perceived an offensive smell near the gate entrance. The coachman usually lived over the stable; but on the removal of his master's family to the sea-side, he stayed in the house, and would naturally leave and enter by the kitchen door; moreover, I understood that Mr. B. at last quitted the house, a very old one, on account of its defective drainage. It is situated at the bottom of a declivity, bounded behind by small wooden houses, some wooden sheds, and a stable, which are not models of sanitary perfection. The coachman, I understood, was consumptive, and several members of his family had died of Phthisis, so that he would presumably be more vulnerable to the attack of Typhoid than a robust man.

I know nothing of the water supply. These facts, in my opinion, point to but one conclusion—viz., that the typhoid contagium proceeded from the drains, and not from the dog at all.

I am, Sir, yours, etc.,

J. W. T. MOORE, M.R.C.V.S.

Inspector of the Privy Council.

Neyland, Pembrokeshire,
March, 1876.

PROFESSIONAL "BÊTES-NOIRES."

To the Editor of the VETERINARY JOURNAL.

SIR,—When so much is being done in the right direction by the heads of the profession towards the elevation of it by means of educational appliances, would it not be well for the practising portion of the community to endeavour to remedy some of the glaring evils which beset it, and retard its rise in public estimation? For, after all, whatever good emanates to us from the fountain-heads, it is the public who are to judge us, and to whom we have to look for support and recognition of that position in the social scale which we ought to occupy.

Firstly, then, I would venture to suggest that veterinary surgeons should, at the earliest opportunity, dispose of their forges, as, apart from the degrading nature of the calling, and it is degrading, when the profit arising from it, if there is any (?), is appropriated by the individual who professes to study scientifically the diseases of animals and their cures. Apart from this, I am informed upon good authority, that the forge, *per se*, is not worth the trouble and annoyance which it entails; but then the trite remark that follows such a suggestion is sure to be, "But see what it brings!" Truly! it brings a contaminating slur on the profession, qualified and unqualified "blacksmiths" being classed together, and the latter are often called to cases of disease, when the former alone should be, and would be, if they were content simply to act as men of science. Longfellow's ideal was doubtless a very worthy member of (his) society; but in these days it behoves us, even at a sacrifice, to show that our calling is a pure and unsullied one, and that the "something attempted, something done," is in the direction of science, not in the attempt to increase the profit of horse-shoeing.

The second suggestion I would venture to make is the total abolition of the practice of horse-dealing and commission-taking so largely carried on, I am ashamed to say, by members of our profession. Too much could not be said against the first; how can the calling of the horse-dealer and the veterinary surgeon be compatible? Why, the two are diametrically opposite! It is the dealer's purpose to hide, as far as he can, all defects; it is the veterinary surgeon's duty to point out such defects. It must then be clear to any right-thinking man, that the two employments cannot consistently or even honestly co-exist. Besides these objections, there is a great practical one: such a course is liable to create a jealous feeling (and justly too) on the part of the legitimate dealer in horses, and he would very naturally object to employ the veterinary surgeon who dabbled in his trade. The custom of taking commission is, of course, the lesser evil, but it is, notwithstanding, a palpable error. The practitioner may be fortunate in arranging satisfactorily sales of horses, and receives his commission for so doing; (why need *he* arrange? and what has *he* to do with anything but his examination fee?) but it not unfrequently happens that it becomes a question of gold *versus* honour, and the veritably unbiassed opinion which he should give, but which would lead to the rejection of the horse and loss of commission, is withheld, and he runs the double risk of loss of character and client. I consider that uniting the trade of a horse-dealer (in whatever shape) and the profession of a veterinary surgeon, is much more humiliating than the "blacksmith" link; illegitimate earnings have an unhealthy relish about them, but the fall of the man who once yields to temptation in attaining them is in most cases Lucifer-like. I know that when his conscience is clear it is hard for the struggling practitioner to refuse the donation, which is often voluntarily offered; but let him remember that one of our greatest bugbears is the "knowing groom," and if he stoops to accept anything out of the "deal," he is sure to be brought into objectionable contact with that personage, whose behaviour at most times is so insufferably

familiar. In conclusion, I would call on the whole profession to practise only the unadulterated "healing heart," for right *is* might; and I feel confident that any man of ordinary capacity and judgment could gain a competency by his profession alone, without tarnishing it by any of the practices to which I have alluded.

If you think my remarks worth insertion in your journal, I shall hope that many may agree with them, and that the day is not far distant when they shall be unpalatable to none; for then, and not till then, shall we be free from contumely, and be able to occupy our proper sphere.

I am, sir,
Yours obediently,
H. D.

To the Editor of the VETERINARY JOURNAL.

SIR,—A chance sentence, in a case reported at length in the March number of the *Veterinary Journal*, reveals one of the reasons for the public refusing to Veterinary Surgeons the respect they accord to other professions. I gather from the sentence in question, that before the writer dare pronounce certain bones to be diseased, he requires his opinion to be endorsed by two butchers.

There are Veterinary Surgeons, again, who, like Quack Doctors (and really this is not the only point of resemblance), send a "sandwich" man round the fair, bearing placards, "respectfully announcing to the public generally and horse buyers in particular," that the celebrated Mr. ——, V.S., may be consulted at a certain tavern, hard by.

There is, at least, one Veterinary Surgeon, and he stands high in the profession, who sends his groom to attend patients—nay, has had the audacity to send him to prescribe for the horse of a Surgeon, who was quite amazed at the impudence of the idea.

There are many others who constantly speak of their calling as the "Farriery Business." Now I have no doubt that "Veterinary Surgery" is a most unwieldy bundle of syllables to those unaccustomed to use them; but that does not justify them in stealing the title of a respectable body of artisans.

So you see that one Veterinary Surgeon evidently considers butchers at least as good morbid anatomists as himself; another puts himself on a level with Quack Doctors; another tacitly admits that his groom is on a professional equality with himself,—admits, in fact, that any one can treat diseased animals without previous study; and others put themselves on the level of horse-shoers, and even appropriate to themselves their name and title.

Then how can we wonder that the public should employ unqualified practitioners, when we virtually admit their right and ability to practise? or if they refuse to give honour to us (as a Profession) when we do not respect ourselves?

Let us at least so educate ourselves, that we may be able to pronounce on the healthy or diseased state of the tissues, without consulting "two experienced butchers."

I remain, Sir, yours truly,
"DIGAMMA."

VETERINARY PROGRESS AND THE PROPOSED SUPPLEMENTAL CHARTER.*

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—In taking up the *Veterinary Journal* for the month of January, I see with great satisfaction that we are at last to have some reforms introduced into our neglected profession; but in glancing carefully over the different clauses, I am astonished to find the two most important, in my opinion, are to be entirely ignored at present, and are put off for further consideration. The first clause merely asks that the members of the Royal College of Veterinary Surgeons shall vote by proxy for members of Council. When you think of the vast number of our brethren who live long distances from London, and the heavy expense incurred in going to and fro, surely it is not too much to give us the power of voting by proxy for those we believe to be most fitted to represent our interests. The second clause is to obtain an Act to empower the Royal College of Veterinary Surgeons to prosecute any unqualified individual using the title of "Veterinary Surgeon." A student usually commences his career by paying a premium to learn the practical part of his profession, and the time spent is about two or three years. During this time he has to provide himself with all the necessaries of life; then he has to go to college either in London, Edinburgh, or Glasgow; and, according to the regulations, he has there to spend three sessions, paying fees as well as the expenses for board, lodging, etc.; he listens to some excellent and some very monotonous lectures for four or five hours a-day, and is also engaged dissecting; afterwards he taxes his brain reading up his notes. This goes on more or less every day during his college career, only varied by a walk on Saturday afternoon or Sundays. At the end of two sessions he is allowed to pass his preliminary examination. On completing the third session he is finally examined for his diploma, after paying the fees, and in the majority of cases he is rewarded by getting a little good advice from the examiner deputed to deliver the fatherly oration, and the diploma is granted. The student's spirits rise on receiving this great piece of parchment, and he returns to his own district. After he has got over the first blush of success, and he thinks his professional life is now smooth, alas! he finds out that, as far as the outside public is concerned, he has thrown away a lot of money and been working his brain night after night, merely to satisfy his own personal ambition, to say nothing of the lengthened period taken to do all this; and he sees an illiterate vulgar man who has had little or no education, but with what the Yankees call "plenty of bounce," and has very likely had a little practice with the nearest farrier, doing the major portion of the work around him; and this man will have "Veterinary Surgeon" over his door, though he has never studied an hour to obtain the title. A case came before my notice a few days ago. In passing through a small country town, a sign which I had not seen before attracted my attention; the name being familiar, I thought I would stop and make inquiries to ascertain if I knew the man. I found I did not; but judge my surprise when the would-be veterinary surgeon told me he had been a joiner only a month before; that he had a brother in the profession in another part of England, and with whom he used to visit cases in the evenings after he had finished his work. He said it was no use going to college, as he knew as much as the professors. You may guess how disgusted I was, but I could not argue with him. I think I have said enough on these subjects to show that both are necessary reforms, and earnestly

* We have received several communications of a similar purport to this, which may be taken as typical of a very manifest and serious grievance that must be redressed before long.—ED. *V. J.*

required by the profession at large; and while the Council is trying for a charter, they should certainly not omit these two very essential clauses. If the Highland Society of Scotland refuse to go in with us on amicable terms in getting this for our mutual benefit, it is high time we tried to steer the boat ourselves. If every member of the Royal College of Veterinary Surgeons in their own counties of Great Britain and Ireland would only take the trouble to lay the facts of the case before each of their representatives in parliament, I feel quite sure both Liberals and Conservatives would render us all the assistance in their power to attain our object.

Yours very truly,

Manchester. ALEXANDER LAWSON, M.R.C.V.S.

CORRIGENDA.

In Professor Walley's paper on "Pleuro-pneumonia Zymotica," in the March No. of the *Journal*, at p. 163, line 14, for "asthenic" read "sthenic"; and at p. 164, line 33, for "interlobular" read "intralobular."

ANSWERS TO CORRESPONDENTS.

A. O. F. COLEMAN, Ottawa, is thanked for his good wishes. We take the greatest interest in the doings and prosperity of our colleagues in all parts of the British Empire (and elsewhere), feeling assured that they are earnestly labouring, like ourselves, to promote Veterinary Science. No nation should be able to contribute more largely to this advancement than our own, as we have an almost unlimited geographical area, embracing every variety of climate; and a large number of species of domesticated animals, some of them brought to the highest state of perfection.

Professor Fearnley's, Messrs. Woodger's, McInnes', Lyman's, Holcombe's, and other Communications received, shall appear in our next.

Communications, Letters, Books, etc., Received.

COMMUNICATIONS have been received from T. Paton, Army Service Corps, Dublin; A. O. F. Coleman, Ottawa, Canada; Professor Walley, Edinburgh; De Thin, London; H. and A. Hunter, Newcastle-on-Tyne; W. Robertson, Kelso; J. B. Martin, Rochester; A. A. Holcombe, D.V.S., New Jersey, U.S.A.; H. Leggett, Luton, Beds; J. Lambert, 17th Lancers; C. P. Lyman, Springfield, Massachusetts, U.S.A.; B. McInnes, Jun., Charleston, U.S.A.; Professor Fearnley, Lerwick; J. Woodger, Jun., London.

BOOKS: Medical Reports in China Customs' Gazette; Report of the Medical Officer of the Privy Council, etc., 1875; Appendices to the Municipal Council Report (Shanghai) for 1874-74; Dictionnaire de Méd. etc., Vétérinaires; Bulletin de la Société Centrale de Médicines Vétérinaires; *A, H. Hassall, M.D.*, Food: its Adulterations, and the Methods for their Detection.

JOURNALS: *Der Thierarzt; Wochenschrift für Thierheilkunde und Viehzucht; Oesterreichische Vierteljahresschrift f. Wissenschaftliche Veterinärkunde; Annales de Méd. Vétérinaire de Bruxelles; Veterinarian; Wochenschrift für Thierheilkunde, etc.; Recueil de Méd. Vétérinaire; Journal de Méd. et de Zootechnie; Revue Vétérinaire; Archivio di Medicina Veterinaria.*

NEWSPAPERS: *North British Agriculturist; Journal of the National Agricultural Society of Victoria; Australasian; Land and Water; Scotsman; Agricultural Gazette; Farmer; Lancet; Kelso Chronicle; Edinburgh Courant.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded addressed to the Editor, "Veterinary Journal," Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions expressed by Contributors. Communications for insertion in the next number must arrive on or before the 15th of the present month.

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